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Scott Lane Construction Phase 1 Detailed Report

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1.1. Basic Project Information

Data Field	Value
Project Name	Scott Lane Construction Phase 1
Construction Start Date	5/1/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	31.0
Location	37.358221908170634, -121.95799891792154
County	Santa Clara
City	Santa Clara
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1822
EDFZ	1
Electric Utility	Silicon Valley Power
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.20

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Other Asphalt Surfaces	60.0	1000sqft	1.38	0.00	545	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.99	1.66	15.8	16.7	0.02	0.67	2.50	3.15	0.62	1.19	1.78	—	2,756	2,756	0.12	0.05	0.80	2,774
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.23	0.25	1.74	1.88	< 0.005	0.07	0.05	0.13	0.07	0.02	0.09	—	376	376	0.02	< 0.005	0.04	378
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.04	0.05	0.32	0.34	< 0.005	0.01	0.01	0.02	0.01	< 0.005	0.02	—	62.2	62.2	< 0.005	< 0.005	0.01	62.5

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.99	1.66	15.8	16.7	0.02	0.67	2.50	3.15	0.62	1.19	1.78	—	2,756	2,756	0.12	0.05	0.80	2,774
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.23	0.25	1.74	1.88	< 0.005	0.07	0.05	0.13	0.07	0.02	0.09	—	376	376	0.02	< 0.005	0.04	378
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.04	0.05	0.32	0.34	< 0.005	0.01	0.01	0.02	0.01	< 0.005	0.02	—	62.2	62.2	< 0.005	< 0.005	0.01	62.5

3. Construction Emissions Details

3.1. Demolition (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.92	1.61	15.6	16.0	0.02	0.67	—	0.67	0.62	—	0.62	—	2,494	2,494	0.10	0.02	—	2,502
Demolition	—	—	—	—	—	—	0.12	0.12	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.85	0.88	< 0.005	0.04	—	0.04	0.03	—	0.03	—	137	137	0.01	< 0.005	—	137
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.16	0.16	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.6	22.6	< 0.005	< 0.005	—	22.7
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.55	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	109	109	< 0.005	< 0.005	0.47	111
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.19	0.09	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	153	153	0.01	0.02	0.33	161
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.61	5.61	< 0.005	< 0.005	0.01	5.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.40	8.40	< 0.005	< 0.005	0.01	8.83
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.93	0.93	< 0.005	< 0.005	< 0.005	0.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.39	1.39	< 0.005	< 0.005	< 0.005	1.46

3.3. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.70	1.43	13.7	12.9	0.02	0.65	—	0.65	0.59	—	0.59	—	2,064	2,064	0.08	0.02	—	2,071
Dust From Material Movement	—	—	—	—	—	—	2.44	2.44	—	1.17	1.17	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.6	22.6	< 0.005	< 0.005	—	22.7
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.74	3.74	< 0.005	< 0.005	—	3.76
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.33	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	65.6	65.6	< 0.005	< 0.005	0.28	66.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.67	0.67	< 0.005	< 0.005	< 0.005	0.68
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Paving (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.63	0.53	4.90	6.53	0.01	0.23	—	0.23	0.21	—	0.21	—	992	992	0.04	0.01	—	995
Paving	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.28	0.38	< 0.005	0.01	—	0.01	0.01	—	0.01	—	57.1	57.1	< 0.005	< 0.005	—	57.3
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.45	9.45	< 0.005	< 0.005	—	9.48
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.55	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	109	109	< 0.005	< 0.005	0.47	111
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.89	5.89	< 0.005	< 0.005	0.01	5.98
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.97	0.97	< 0.005	< 0.005	< 0.005	0.99
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Architectural Coating (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	0.91	1.15	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.68	7.68	< 0.005	< 0.005	—	7.71
Architectural Coatings	—	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.27	1.27	< 0.005	< 0.005	—	1.28
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.01	0.18	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	35.0	35.0	< 0.005	< 0.005	0.15	35.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.88	1.88	< 0.005	< 0.005	< 0.005	1.91
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	0.32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Relocate Portables (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.02	0.86	7.11	6.16	0.02	0.27	—	0.27	0.25	—	0.25	—	2,320	2,320	0.09	0.02	—	2,328
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.39	0.34	< 0.005	0.01	—	0.01	0.01	—	0.01	—	127	127	0.01	< 0.005	—	128
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.0	21.0	< 0.005	< 0.005	—	21.1
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.22	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	43.7	43.7	< 0.005	< 0.005	0.19	44.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.24	2.24	< 0.005	< 0.005	< 0.005	2.28
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.37	0.37	< 0.005	< 0.005	< 0.005	0.38
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	6/1/2024	6/28/2024	5.00	20.0	—
Site Preparation	Site Preparation	7/27/2024	8/1/2024	5.00	4.00	—

Paving	Paving	8/2/2024	8/30/2024	5.00	21.0	—
Architectural Coating	Architectural Coating	9/1/2024	9/30/2024	5.00	21.0	—
Relocate Portables	Trenching	6/29/2024	7/26/2024	5.00	20.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Average	1.00	6.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Relocate Portables	Cranes	Diesel	Average	1.00	8.00	367	0.29
Relocate Portables	Off-Highway Trucks	Diesel	Average	1.00	8.00	376	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	12.5	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	2.10	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	7.50	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	12.5	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	4.00	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Relocate Portables	—	—	—	—
Relocate Portables	Worker	5.00	11.7	LDA,LDT1,LDT2
Relocate Portables	Vendor	—	8.40	HHDT,MHDT
Relocate Portables	Hauling	0.00	20.0	HHDT
Relocate Portables	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	0.00	0.00	3,600

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	3,573	—
Site Preparation	0.00	0.00	3.75	0.00	—
Paving	0.00	0.00	0.00	0.00	1.38

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Asphalt Surfaces	1.38	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	387	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.8	annual days of extreme heat
Extreme Precipitation	2.65	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	1	1	2
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	17.6
AQ-PM	22.5
AQ-DPM	79.3
Drinking Water	50.2
Lead Risk Housing	56.7

Pesticides	1.97
Toxic Releases	37.8
Traffic	82.5
Effect Indicators	—
CleanUp Sites	99.9
Groundwater	98.4
Haz Waste Facilities/Generators	98.4
Impaired Water Bodies	33.2
Solid Waste	95.0
Sensitive Population	—
Asthma	28.6
Cardio-vascular	47.5
Low Birth Weights	54.6
Socioeconomic Factor Indicators	—
Education	55.8
Housing	89.2
Linguistic	15.6
Poverty	35.2
Unemployment	4.89

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	45.14307712
Employed	91.65918132
Median HI	61.15744899

Education	—
Bachelor's or higher	65.78981137
High school enrollment	100
Preschool enrollment	13.49929424
Transportation	—
Auto Access	27.46054151
Active commuting	73.93814962
Social	—
2-parent households	61.7862184
Voting	61.15744899
Neighborhood	—
Alcohol availability	28.82073656
Park access	60.96496856
Retail density	92.32644681
Supermarket access	33.32477865
Tree canopy	70.70447838
Housing	—
Homeownership	12.81919672
Housing habitability	13.48646221
Low-inc homeowner severe housing cost burden	53.29141537
Low-inc renter severe housing cost burden	41.94790196
Uncrowded housing	15.44976261
Health Outcomes	—
Insured adults	32.06723983
Arthritis	83.7
Asthma ER Admissions	64.9
High Blood Pressure	83.5

Cancer (excluding skin)	68.9
Asthma	49.0
Coronary Heart Disease	74.7
Chronic Obstructive Pulmonary Disease	62.6
Diagnosed Diabetes	65.9
Life Expectancy at Birth	62.1
Cognitively Disabled	52.2
Physically Disabled	19.5
Heart Attack ER Admissions	48.1
Mental Health Not Good	47.3
Chronic Kidney Disease	79.8
Obesity	59.2
Pedestrian Injuries	89.9
Physical Health Not Good	53.6
Stroke	70.4
Health Risk Behaviors	—
Binge Drinking	61.9
Current Smoker	48.5
No Leisure Time for Physical Activity	45.4
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	31.0
Elderly	65.5
English Speaking	23.0
Foreign-born	90.5
Outdoor Workers	43.6

Climate Change Adaptive Capacity	—
Impervious Surface Cover	22.9
Traffic Density	71.8
Traffic Access	74.4
Other Indices	—
Hardship	56.2
Other Decision Support	—
2016 Voting	56.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	60.0
Healthy Places Index Score for Project Location (b)	56.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Updated construction phases and schedule to reflect Phase 1 of Phased Scott Lane Master Plan received 10/10/2022.
Construction: Off-Road Equipment	Assumed one crane and one off-highway truck for Relocate Portables phase.
Construction: Dust From Material Movement	—
Construction: Trips and VMT	Assumed four worker trips for Architectural Coating Phase.

Scott Lane Construction End Phase Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Scott Lane Construction End Phase
Construction Start Date	1/1/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	31.0
Location	37.3582814667041, -121.95800053956327
County	Santa Clara
City	Santa Clara
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1822
EDFZ	1
Electric Utility	Silicon Valley Power
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.20

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Elementary School	45.0	1000sqft	1.03	45,000	15,000	0.00	—	—

Other Asphalt Surfaces	28.0	1000sqft	0.64	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.37	1.14	9.25	10.9	0.02	0.33	0.21	0.54	0.30	0.05	0.36	—	2,162	2,162	0.09	0.05	1.17	2,180
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.90	47.9	15.3	16.2	0.03	0.64	7.17	7.81	0.59	3.44	4.04	—	3,625	3,625	0.19	0.19	0.07	3,685
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.90	2.06	6.29	7.26	0.01	0.23	0.29	0.52	0.21	0.09	0.31	—	1,452	1,452	0.06	0.04	0.35	1,465
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.16	0.38	1.15	1.33	< 0.005	0.04	0.05	0.10	0.04	0.02	0.06	—	240	240	0.01	0.01	0.06	243

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.37	1.14	9.25	10.9	0.02	0.33	0.21	0.54	0.30	0.05	0.36	—	2,162	2,162	0.09	0.05	1.17	2,180
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.90	47.9	15.3	16.2	0.03	0.64	7.17	7.81	0.59	3.44	4.04	—	3,625	3,625	0.19	0.19	0.07	3,685
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.90	2.06	6.29	7.26	0.01	0.23	0.29	0.52	0.21	0.09	0.31	—	1,452	1,452	0.06	0.04	0.35	1,465
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.16	0.38	1.15	1.33	< 0.005	0.04	0.05	0.10	0.04	0.02	0.06	—	240	240	0.01	0.01	0.06	243

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.75	1.47	13.9	15.1	0.02	0.57	—	0.57	0.52	—	0.52	—	2,494	2,494	0.10	0.02	—	2,502
Demolition	—	—	—	—	—	—	0.81	0.81	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.76	0.83	< 0.005	0.03	—	0.03	0.03	—	0.03	—	137	137	0.01	< 0.005	—	137
Demolition	—	—	—	—	—	—	0.04	0.04	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.6	22.6	< 0.005	< 0.005	—	22.7
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.44	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	99.2	99.2	< 0.005	< 0.005	0.01	101
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.11	0.02	1.36	0.64	0.01	0.02	0.27	0.29	0.01	0.07	0.09	—	1,032	1,032	0.09	0.16	0.06	1,083
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.50	5.50	< 0.005	< 0.005	0.01	5.58
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.07	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	56.5	56.5	< 0.005	0.01	0.05	59.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.91	0.91	< 0.005	< 0.005	< 0.005	0.92

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.36	9.36	< 0.005	< 0.005	0.01	9.83

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.56	1.31	12.1	12.1	0.02	0.56	—	0.56	0.52	—	0.52	—	2,065	2,065	0.08	0.02	—	2,072
Dust From Material Movement	—	—	—	—	—	—	6.26	6.26	—	3.00	3.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.3	11.3	< 0.005	< 0.005	—	11.4
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.87	1.87	< 0.005	< 0.005	—	1.88
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.26	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	59.5	59.5	< 0.005	< 0.005	0.01	60.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.05	0.05	< 0.005	< 0.005	< 0.005	0.06
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.80	1.51	14.1	14.5	0.02	0.64	—	0.64	0.59	—	0.59	—	2,455	2,455	0.10	0.02	—	2,463
Dust From Material Movement	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.16	< 0.005	0.01	—	0.01	0.01	—	0.01	—	26.9	26.9	< 0.005	< 0.005	—	27.0
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.45	4.45	< 0.005	< 0.005	—	4.47
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.35	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	79.4	79.4	< 0.005	< 0.005	0.01	80.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.88	0.88	< 0.005	< 0.005	< 0.005	0.89
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.15	0.15	< 0.005	< 0.005	< 0.005	0.15
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	8.95	10.0	0.02	0.33	—	0.33	0.30	—	0.30	—	1,801	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	8.95	10.0	0.02	0.33	—	0.33	0.30	—	0.30	—	1,801	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.70	0.58	4.90	5.50	0.01	0.18	—	0.18	0.17	—	0.17	—	987	987	0.04	0.01	—	990
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.89	1.00	< 0.005	0.03	—	0.03	0.03	—	0.03	—	163	163	0.01	< 0.005	—	164
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.05	0.77	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	162	162	< 0.005	0.01	0.64	165
Vendor	0.02	0.01	0.26	0.12	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	199	199	0.01	0.03	0.53	208
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.06	0.66	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	150	150	< 0.005	0.01	0.02	152
Vendor	0.02	0.01	0.27	0.13	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	199	199	0.01	0.03	0.01	208
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.03	0.03	0.03	0.36	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	83.1	83.1	< 0.005	< 0.005	0.15	84.3
Vendor	0.01	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	109	109	0.01	0.02	0.13	114
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	13.8	13.8	< 0.005	< 0.005	0.03	14.0
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	18.1	18.1	< 0.005	< 0.005	0.02	18.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	0.49	4.63	6.50	0.01	0.20	—	0.20	0.19	—	0.19	—	992	992	0.04	0.01	—	995
Paving	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.13	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.50	4.50	< 0.005	< 0.005	—	4.51
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.44	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	99.2	99.2	< 0.005	< 0.005	0.01	101
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.75	2.75	< 0.005	< 0.005	0.01	2.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.46	0.46	< 0.005	< 0.005	< 0.005	0.46
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.66	3.66	< 0.005	< 0.005	—	3.67
Architectural Coatings	—	1.31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.61	0.61	< 0.005	< 0.005	—	0.61
Architectural Coatings	—	0.24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.0	30.0	< 0.005	< 0.005	< 0.005	30.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.84
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.14	0.14	< 0.005	< 0.005	< 0.005	0.14
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/1/2025	1/29/2025	5.00	20.0	—
Site Preparation	Site Preparation	1/30/2025	2/1/2025	5.00	2.00	—
Grading	Grading	2/2/2025	2/7/2025	5.00	4.00	—
Building Construction	Building Construction	2/8/2025	11/15/2025	5.00	200	—
Paving	Paving	11/16/2025	11/30/2025	5.00	10.0	—
Architectural Coating	Architectural Coating	12/1/2025	12/15/2025	5.00	10.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40

Building Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29
Building Construction	Forklifts	Diesel	Average	1.00	6.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	3.00	8.00	46.0	0.45
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Average	1.00	6.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	12.5	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	14.4	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	7.50	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT

Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	10.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	18.9	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	7.38	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	12.5	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	3.78	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	67,500	22,500	1,680

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	25,000	—
Site Preparation	0.00	0.00	1.88	0.00	—
Grading	0.00	0.00	4.00	0.00	—
Paving	0.00	0.00	0.00	0.00	0.64

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Elementary School	0.00	0%
Other Asphalt Surfaces	0.64	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	387	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.8	annual days of extreme heat
Extreme Precipitation	2.65	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	1	1	2
Sea Level Rise	1	1	1	2

Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	17.6
AQ-PM	22.5
AQ-DPM	79.3
Drinking Water	50.2
Lead Risk Housing	56.7
Pesticides	1.97
Toxic Releases	37.8
Traffic	82.5
Effect Indicators	—
CleanUp Sites	99.9

Groundwater	98.4
Haz Waste Facilities/Generators	98.4
Impaired Water Bodies	33.2
Solid Waste	95.0
Sensitive Population	—
Asthma	28.6
Cardio-vascular	47.5
Low Birth Weights	54.6
Socioeconomic Factor Indicators	—
Education	55.8
Housing	89.2
Linguistic	15.6
Poverty	35.2
Unemployment	4.89

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	45.14307712
Employed	91.65918132
Median HI	61.15744899
Education	—
Bachelor's or higher	65.78981137
High school enrollment	100
Preschool enrollment	13.49929424
Transportation	—

Auto Access	27.46054151
Active commuting	73.93814962
Social	—
2-parent households	61.7862184
Voting	61.15744899
Neighborhood	—
Alcohol availability	28.82073656
Park access	60.96496856
Retail density	92.32644681
Supermarket access	33.32477865
Tree canopy	70.70447838
Housing	—
Homeownership	12.81919672
Housing habitability	13.48646221
Low-inc homeowner severe housing cost burden	53.29141537
Low-inc renter severe housing cost burden	41.94790196
Uncrowded housing	15.44976261
Health Outcomes	—
Insured adults	32.06723983
Arthritis	83.7
Asthma ER Admissions	64.9
High Blood Pressure	83.5
Cancer (excluding skin)	68.9
Asthma	49.0
Coronary Heart Disease	74.7
Chronic Obstructive Pulmonary Disease	62.6
Diagnosed Diabetes	65.9

Life Expectancy at Birth	62.1
Cognitively Disabled	52.2
Physically Disabled	19.5
Heart Attack ER Admissions	48.1
Mental Health Not Good	47.3
Chronic Kidney Disease	79.8
Obesity	59.2
Pedestrian Injuries	89.9
Physical Health Not Good	53.6
Stroke	70.4
Health Risk Behaviors	—
Binge Drinking	61.9
Current Smoker	48.5
No Leisure Time for Physical Activity	45.4
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	31.0
Elderly	65.5
English Speaking	23.0
Foreign-born	90.5
Outdoor Workers	43.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	22.9
Traffic Density	71.8
Traffic Access	74.4
Other Indices	—

Hardship	56.2
Other Decision Support	—
2016 Voting	56.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	60.0
Healthy Places Index Score for Project Location (b)	56.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Elementary School building square footage based on total approximate square footage of buildings from Phase 2 through Phase 5. Parking square footage based on total approximate square footage of parking lot extension for Phase 5.

Appendix B: Tree Inventory Report

DRAFT Tree Inventory Report

Scott Lane Elementary School

Santa Clara, CA

PREPARED FOR

Verde Design, Inc.
2455 The Alameda, Suite 200
Santa Clara, CA 95050

PREPARED BY:

HortScience | Bartlett Consulting
325 Ray St.
Pleasanton, CA 94566

May 2019

HORT SCIENCE
BARTLETT CONSULTING
A Division of The F.A. Bartlett Tree Expert Company

DARFT Tree Inventory Report
Scott Lane Elementary School
Santa Clara, CA

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Exhibits

Tree Assessment Form

Tree Assessment Map

DRAFT Tree Inventory Report
Scott Lane Elementary School
Santa Clara, CA

Introduction and Overview

In preparation for upgrades to Santa Clara School District (SCSD) facilities, Verde Design, Inc. is working with contractors to inventory assets on all of Santa Clara's facilities, including the trees. HortScience | Bartlett Consulting (Divisions of the F. A. Bartlett Tree Expert Co.) was asked to prepare a **Tree Inventory Report** for the Scott Lane Elementary School to help in the design and planning stages of the upcoming renovations. Once grading, drainage, utility and construction plans are prepared, specific tree impacts can be assessed, and a complete **Arborist Report** prepared.

This report provides the following information:

1. Assessment of the health and structural condition of the trees within and adjacent to Scott Lane Elementary School based on a visual inspection from the ground.
2. Evaluation of the suitability for preservation of each tree.
3. Tree management recommendations.
4. Preliminary guidelines for tree preservation during the design, construction and maintenance phases of development.

Tree Assessment Methods

Trees were assessed in December 2018 and included tag #'s 1595-1717. The assessment included all trees measuring 4" and greater in diameter, located within and adjacent to the proposed project area. Off-site trees with canopies extending over the property line were included in the assessment. The assessment procedure consisted of the following steps:

1. Identifying the tree as to species;
2. Tagging each tree with an identifying number and recording its location on a map;
3. Measuring the trunk diameter at a point 48" above grade;
4. Evaluating the health and structural condition using a scale of 0 – 5:
   - ***5* -** A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
   - ***4* -** Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
   - ***3* -** Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
   - ***2*** - Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
   - ***1* -** Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.
   - ***0*** – Dead.
5. Rating the suitability for preservation as "high", "moderate" or "low". Suitability for preservation considers the health, age and structural condition of the tree, and its potential to remain an asset to the site for years to come.
   - ***High***: Trees with good health and structural stability that have the potential for longevity at the site.
   - ***Moderate***: Trees with somewhat declining health and/or structural defects that can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in 'high' category.
   - ***Low***: Tree in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual may have characteristics that are undesirable for landscapes and generally are unsuited for use areas.

Description of Trees

One hundred and twenty-three (123) trees representing 19 species were evaluated (Table 1, following page). Two (2) off-site trees (#1637 and 1689) and 2 property-line trees (#1638 and 1666) with portions of their canopies extending onto the school site were included in the assessment. Descriptions of each tree are found in the ***Tree Assessment Form*** and approximate locations are plotted on the ***Tree Assessment Map*** (see Exhibits).

Coat redwood, with 31 trees was the most commonly encountered species. They were spread out acorss the site, with 13 on the interior of the site, 8 along the southern boundary, 7 along the eastern boundary, 2 on the northern boundary and #1702 on the west side, adjacent to Scott Boulevard. The majority were mature in form and development, with trunk diameters between 20" and 62" and an average of 35" (**Photo 1**). Coast redwood #1596 was semi-mature (17" in diameter) and #1658 was young at 5" in diameter. Twenty-four (24) of the trees were in good or excellent condition and 7 were in fair. None of the coast redwoods were in poor condition. The majority showed some amount of twig and branch dieback associated with drought stress. Seven (7) had displaced the adjacent asphalt from 1" to 4" and the crown of coast redwood #1671 encroached into the playfield by an estimated 10%.

Photo 1: Looking southeast at coast redwoods #1664 (R) and 1667-1670 (L). Coast redwoods at Scott Lane Elementary were generally mature and in good condition.

Most of the trees showed some amount of twig and branch dieback as a result of drought-stress.

Nineteen (19) Italian stone pines had been planted along the southern boundary and were intermixed with the coast redwoods. Due to the close spacing between trees and their large crowns at maturity, many of the trees had leans, bowed trunks and/or one-sided crowns. Fifteen (15) of the Italian stone pines were in fair condition, 3 were in good and #1647 was in poor.

Fifteen (15) holly oaks were assessed, with 9 planted in a cluster on the interior of the site, 3 located along Scott Blvd. frontage, 2 along the southern boundary and #1684 growing adjacent to the play field. They were primarily mature with trunk diameters between 8" and 32" and an average of 21". Holly oaks were in fair (8 trees) to hood (7 trees) condition.

Table 1. Condition ratings and frequency of occurrence of trees
Scott Lane Elementary School, Santa Clara CA

Common Name	**Scientific Name**	**Condition**				**Total**
		Dead (0)	Poor (1-2)	Fair (3)	Good (4-5)	
Blue atlas cedar	*Cedrus atlantica* 'Glauca'	-	-	2	-	**2**
Deodar cedar	*Cedrus deodara*	-	-	-	2	**2**
Carob	*Ceratonia siliqua*	-	1	-	-	**1**
Silver dollar gum	*Eucalyptus polyanthemos*	-	-	3	-	**3**
Modesto ash	*Fraxinus velutina* 'Modesto'	-	-	-	1	**1**
Australian willow	*Geijera parviflora*	-	-	15	-	**15**
Honey locust	*Gleditsia triacanthos*	-	-	4	2	**6**
Jacaranda	*Jacaranda mimosifolia*	-	-	-	2	**2**
Crape myrtle	*Lagerstroemia indica*	-	-	-	1	**1**
Southern magnolia	*Magnolia grandiflora*	-	-	-	5	**5**
Mayten	*Maytenus boaria*	1	1	2	-	**4**
White mulberry	*Morus alba*	-	1	2	-	**3**
Olive	*Olea europaea*	-	1	-	-	**1**
Italian stone pine	*Pinus pinea*	-	1	15	3	**19**
Monterey pine	*Pinus radiata*	-	1	-	-	**1**
Holly oak	*Quercus ilex*	-	-	8	7	**15**
Coast redwood	*Sequoia sempervirens*	-	-	7	24	**31**
Chinese elm	*Ulmus parvifolia*	-	-	5	-	**5**
Sawleaf zelkova	*Zelkova serrata*	-	-	4	2	**6**
Total		**1**	**6**	**67**	**49**	**123**
		<1%	5%	55%	40%	100%

Fifteen (15) Australian willows had been planted along the southern boundary. The species had not performed well in this location and several had been topped. All 15 were in fair condition and 6 had displaced the adjacent asphalt from 1" to 5".

Six (6) sawleaf zelkovas were growing along the Scott Blvd. frontage. They were all mature (22" to 28" in trunk diameter) and they had all been pruned for the overhead utility lines in the area. Four (4) were in fair condition and 2 were in good. They all had twig dieback in the crowns ranging from minor to extensive.

Six (6) honey locusts were assessed in the courtyards between the classroom buildings. They were semi-mature and in fair condition. They all had trunk wounds and several had internal decay (**Photo 2**, following page). Honey locusts #1617-1619 had fruiting bodies of the heart rot fungus *ganoderma*, which degrades wood strength and can predispose the trees to failure.

Five (5) Chinese elms had been planted in a row on the interior of the school, adjacent to the play field. They were semi-mature to mature (13" to 21" in trunk diameter). Condition was good for 2 trees and fair for 2.

Five (5) Southern magnolias were growing in a row in the northwest corner of the site, adjacent to Scott Boulevard. They were all semi-mature (16" to 19" in trunk diameter and in in good condition.

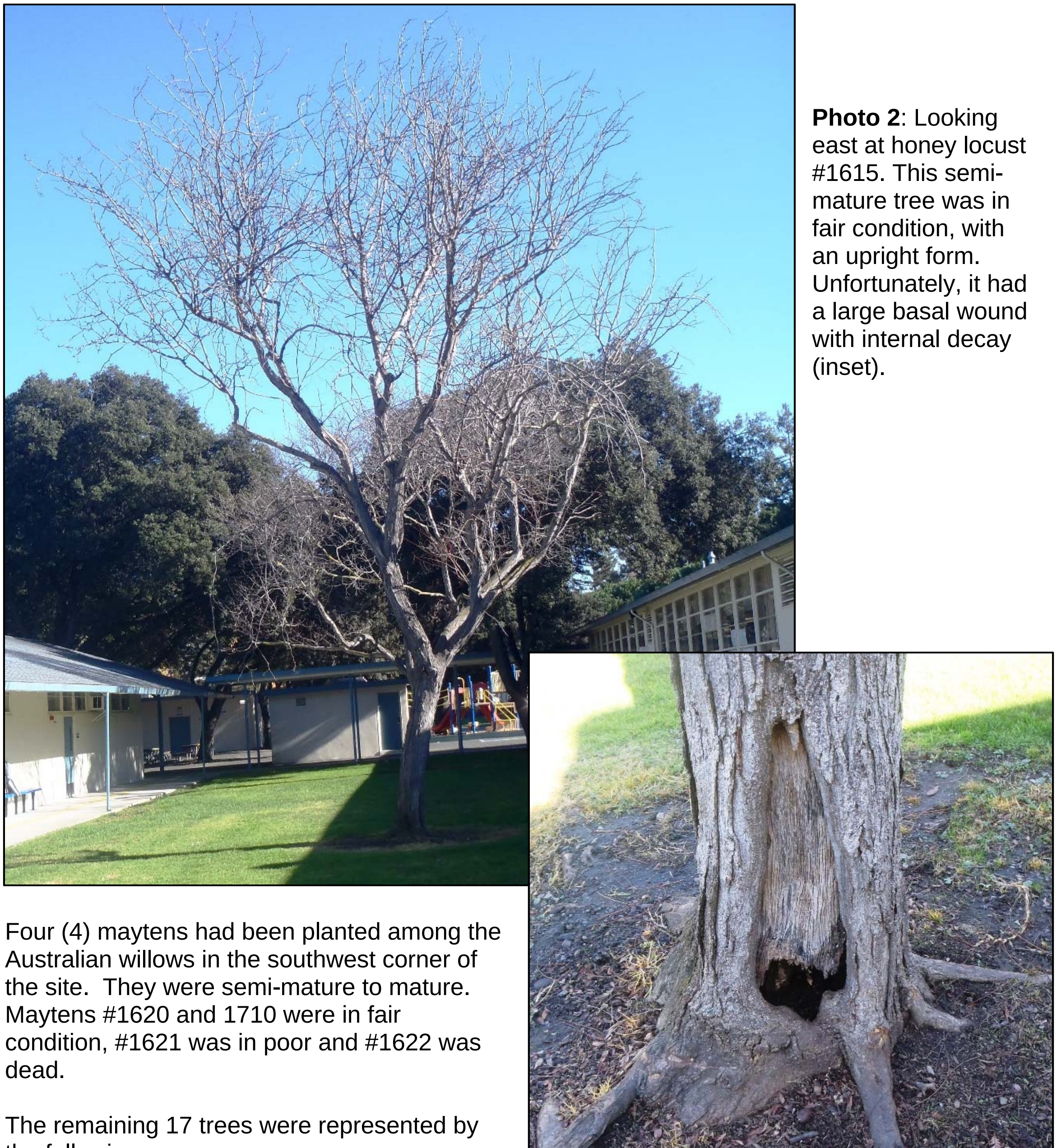


Photo 2: Looking east at honey locust #1615. This semi-mature tree was in fair condition, with an upright form. Unfortunately, it had a large basal wound with internal decay (inset).

Four (4) maytens had been planted among the Australian willows in the southwest corner of the site. They were semi-mature to mature. Maytens #1620 and 1710 were in fair condition, #1621 was in poor and #1622 was dead.

The remaining 17 trees were represented by the following:

- 3 white mulberries were growing in a row near the entrance to the school. #1601 was in poor condition and #1602 and 1603 were in fair.
- 3 silver dollar gums along the southern boundary, including off-site tree #1637 and property-line trees #1638 and 1666. All were mature and in fair condition.
- 2 jacarandas had been planted adjacent to the play field. They were young to semi-mature and in good condition.
- 2 mature deodar cedars growing along the Cabrillo Ave. frontage. They were in good condition despite being pruned on the south side for the overhead utility lines.
- 2 blue atlas cedars, including a young tree (#1604) and a mature tree (#1705). #1604 had a weeping form and #1705 was a standard, upright form. Both were in fair condition.

- One (1) each of the following: Monterey pine, olive, crape myrtle, Modesto ash and carob.

Overall, 67 trees were in fair condition (55% of the total population), 49 were in good (40%), 6 were in poor (5%) and mayten #1622 was dead (<1%).

The City of Santa Clara's criteria for *Protected* tree status is established in General Plan Conservation Policy 5.10.1-P4, "Protect all healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference (12 inches in diameter) measured at 48 inches above-grade on private and public property as well as in the public right-of-way." In total, 117 of the trees met the criteria to be considered *Protected*. *Protected* trees are identified in the ***Tree Assessment Form***.

Suitability for Preservation

Before evaluating the impacts that will occur during development, it is important to consider the quality of the tree resource itself, and the potential for individual trees to function well over an extended length of time. Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape.

Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. For trees growing in open fields, away from areas where people and property are present, structural defects and/or poor health presents a low risk of damage or injury if they fail. However, we must be concerned about safety in use areas. Therefore, where development encroaches into existing plantings, we must consider their structural stability as well as their potential to grow and thrive in a new environment. Where development will not occur, the normal life cycles of decline, structural failure and death should be allowed to continue.

Evaluation of suitability for preservation considers several factors:

- **Tree health**
  Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.

- **Structural integrity**
  Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely. Honey locusts #1615 and 1617-1619 are examples of such trees.

- **Species response**
  There is a wide variation in the response of individual species to construction impacts and changes in the environment. For instance, coast redwood and holly oak are more tolerant of construction impacts than is Italian stone pine.

- **Tree age and longevity**
  Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.

- **Species invasiveness**
  Species that spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database (http://www.cal-ipc.org/paf/) lists species identified as being invasive. Santa Clara is part of the Central West Floristic Province. None of the species assessed at Scott Lane Elementary School were listed as being invasive.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (see ***Tree Assessment Forms*** in Exhibits. Table 2 provides a summary of suitability ratings.

We consider trees with high suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with low suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Table 2: Tree suitability for preservation
Scott Lane Elementary School, Santa Clara CA

High	These are trees with good health and structural stability that have the potential for longevity at the site. Nineteen (19) trees were considered highly suitable for preservation, including; 12 coast redwoods, 3 holy oaks, 2 honey locusts, crape myrtle #1600 and deodar cedar #1693.
Moderate	Trees in this category have fair health and/or structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the “high” category. Seventy-nine (79) trees had moderate suitability for preservation, including; 17 coast redwoods, 13 Italian stone pines, 11 Australian willows, 11 holly oaks, 5 Southern magnolias, 5 Chinese elms, 4 sawleaf zelkovas, 3 silver dollar gums, 2 white mulberries, 2 jarandas, 2 honey locusts, blue atlas cedar #1604, mayten #1620 deodar cedar #1692 and Modesto ash #1714.
Low	Trees in this category are in poor health or have significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Twenty-five (25) trees were identified as having low suitability for preservation, including 6 Italian stone pines, 4 Australian willows, 3 maytens, 2 coast redwoods, 2 sawleaf zelkovas, 2 honey locusts, white mulberry #1601, holly oak #1609, Monterey pine #1689, blue atlas cedar #1705, carob #1715 and olive #1716.

Estimated Value of Trees

The City of Santa Clara asked that the value of all trees assessed at their facilities be established. To accomplish this, I used the standard methods found in *Guide for Plant Appraisal*, 9th edition (published in 2000 by the International Society of Arboriculture, Champaign IL). In addition, I referred to *Species Classification and Group Assignment* (2004), a publication of the Western Chapter of the International Society of Arboriculture. These two documents outline the methods employed in tree appraisal.

The value of landscape trees is based upon four factors: size, species, condition and location. Size is measured as trunk diameter, normally 54" above grade. The species factor considers the adaptability and appropriateness of the plant in the East Bay area. The *Species Classification and Group Assignmen*t lists recommended species ratings and evaluations. Condition reflects the health and structural integrity of the individual, as noted in the ***Tree Assessment Form***. Location considers the site, placement and contribution of the tree in its surrounding landscape. In this case, the trees are located in a desirable residential neighborhood of Santa Clara.

The appraised value of the 123 trees assessed at Scott Lane Elementary School was $876,650 (Table 3).

Table 3: Estimated value of trees
Scott Lane Elementary School, Santa Clara CA

Tree No.	**Species**	**Trunk diameter** (in.)	**Protected**	**Estimated value ($)**
1595	Coast redwood	25	Yes	7,550
1596	Coast redwood	17	Yes	2,550
1597	Coast redwood	32	Yes	12,100
1598	Coast redwood	28	Yes	9,450
1599	Coast redwood	21	Yes	3,850
1600	Crape myrtle	5	No	850
1601	White mulberry	21	Yes	900
1602	White mulberry	21	Yes	1,500
1603	White mulberry	24	Yes	1,950
1604	Blue atlas cedar	4	No	200
1605	Holly oak	31	Yes	18,650
1606	Holly oak	23	Yes	7,500
1607	Holly oak	26	Yes	13,400
1608	Holly oak	20	Yes	7,950
1609	Holly oak	23	Yes	7,500
1610	Holly oak	27	Yes	10,350
1611	Holly oak	32	Yes	14,200
1612	Holly oak	22	Yes	6,850
1613	Holly oak	16,15	Yes	9,550
1614	Honey locust	15	Yes	3,050
1615	Honey locust	12	Yes	1,400
1616	Honey locust	15	Yes	3,050
1617	Honey locust	18	Yes	3,150
1618	Honey locust	16	Yes	2,500
1619	Honey locust	15	Yes	2,200
1620	Mayten	10,9,8	Yes	2,550
1621	Mayten	12	Yes	900
1622	Mayten	15	Yes	0
1623	Australian willow	14	Yes	1,900

(**Continued, following page**)

Table 3: Estimated value of trees, continued
Scott Lane Elementary School, Santa Clara CA

Tree No.	Species	Trunk diameter (in.)	Protected	Estimated value ($)
1624	Australian willow	12	Yes	1,400
1625	Australian willow	18	Yes	3,150
1626	Australian willow	12	Yes	1,400
1627	Australian willow	15	Yes	2,200
1628	Australian willow	16	Yes	2,500
1629	Australian willow	13	Yes	1,650
1630	Australian willow	13	Yes	1,650
1631	Australian willow	24	Yes	5,550
1632	Australian willow	16	Yes	2,500
1633	Australian willow	19	Yes	3,500
1634	Australian willow	15	Yes	2,200
1635	Holly oak	9	Yes	1,250
1636	Holly oak	8	Yes	1,000
1637	Silver dollar gum	22	Yes	7,200
1638	Silver dollar gum	28	Yes	11,650
1639	Coast redwood	20,18	Yes	9,200
1640	Italian stone pine	27	Yes	5,150
1641	Coast redwood	25	Yes	7,950
1642	Italian stone pine	21,19	Yes	5,650
1643	Coast redwood	22,9	Yes	5,150
1644	Italian stone pine	20,18	Yes	7,150
1645	Italian stone pine	18	Yes	3,250
1646	Italian stone pine	21	Yes	3,150
1647	Italian stone pine	13	Yes	750
1648	Italian stone pine	14	Yes	1,400
1649	Italian stone pine	15,13	Yes	2,800
1650	Italian stone pine	18,11	Yes	3,150
1651	Italian stone pine	13	Yes	1,200
1652	Italian stone pine	10	No	750
1653	Italian stone pine	18,17	Yes	4,350
1654	Italian stone pine	14,13	Yes	2,600
1655	Italian stone pine	19	Yes	2,550
1656	Coast redwood	32	Yes	12,700
1657	Coast redwood	32	Yes	16,350
1658	Coast redwood	5	Yes	400
1659	Italian stone pine	23,19	Yes	8,750
1660	Italian stone pine	12	Yes	1,050
1661	Italian stone pine	26	Yes	4,750
1662	Coast redwood	27,9	Yes	10,250
1663	Italian stone pine	32	Yes	7,050
1664	Coast redwood	39	Yes	17,800
1665	Italian stone pine	7	No	400
1666	Silver dollar gum	25	Yes	9,300
1667	Coast redwood	39	Yes	17,800
1668	Coast redwood	46	Yes	22,400
1669	Coast redwood	25	Yes	7,950
1670	Coast redwood	34	Yes	14,200
1671	Coast redwood	55	Yes	27,500
1672	Coast redwood	40	Yes	18,500

(**Continued, following page**)

Table 3: Estimated value of trees, continued
Scott Lane Elementary School, Santa Clara CA

Tree No.	Species	Trunk diameter (in.)	Protected	Estimated value ($)
1673	Coast redwood	34,24	Yes	21,450
1674	Coast redwood	55,12	Yes	27,950
1675	Coast redwood	28	Yes	9,450
1676	Coast redwood	30	Yes	10,850
1677	Coast redwood	40	Yes	17,600
1678	Coast redwood	28	Yes	6,750
1679	Coast redwood	44	Yes	14,400
1680	Coast redwood	56	Yes	26,700
1681	Chinese elm	13,13,12	Yes	6,850
1682	Chinese elm	17	Yes	4,100
1683	Chinese elm	27	Yes	10,350
1684	Holly oak	22	Yes	9,600
1685	Chinese elm	21	Yes	6,250
1686	Chinese elm	16	Yes	3,650
1687	Jacaranda	13	Yes	1,400
1688	Jacaranda	10	No	850
1689	Monterey pine	25	Yes	1,050
1690	Coast redwood	42	Yes	14,150
1691	Coast redwood	34	Yes	10,150
1692	Deodar cedar	32	Yes	15,850
1693	Deodar cedar	37	Yes	20,500
1694	Holly oak	10	Yes	1,500
1695	Southern magnolia	16,12	Yes	6,350
1696	Holly oak	16	Yes	5,350
1697	Southern magnolia	16	Yes	4,100
1698	Southern magnolia	19	Yes	5,750
1699	Southern magnolia	16	Yes	4,100
1700	Southern magnolia	18	Yes	5,200
1701	Holly oak	20	Yes	8,350
1702	Coast redwood	62	Yes	30,900
1703	Sawleaf zelkova	22	Yes	7,200
1704	Sawleaf zelkova	23	Yes	7,900
1705	Blue atlas cedar	19,18,12	Yes	9,350
1706	Sawleaf zelkova	27	Yes	7,550
1707	Sawleaf zelkova	23	Yes	5,650
1708	Sawleaf zelkova	24	Yes	6,150
1709	Sawleaf zelkova	26	Yes	7,200
1710	Mayten	20	Yes	4,600
1711	Australian willow	11	No	1,200
1712	Australian willow	16	Yes	2,500
1713	Australian willow	20	Yes	3,850
1714	Modesto ash	27	Yes	4,900
1715	Carob	28	Yes	2,800
1716	Olive	8	Yes	300
1717	Coast redwood	42	Yes	24,300

Maintenance Recommendations

In an effort to help guide management of the tree resource at Pomeroy Elementary, the following maintenance recommendations are provided. These are recommendations that will help correct existing defects in tree structure, reduce the potential for future failures and improve the health and longevity of those trees that will be retained as part of the renovations. Table 4 page 13, summarizes the maintenance recommendations and recommendations for individual trees are also provided in the ***Tree Assessment Form***.

- **Pruning practices** – Pruning (proper and improper) has long-term impacts on tree structure and health. Having employees knowledgeable in proper pruning of ornamental trees and what the industry standards are for pruning trees is critical to maintaining the beauty and longevity of the tree resource. Eleven (11) of the trees assessed at Scott Lane Elementary School were identified as needing pruning, including 6 to reduce branch weight and extension, 3 to clean the crown and 2 to remove defective parts.

- **Cabling and bracing** – When trees have codominant or multiple stems emerging at the same point, there is an elevated risk for a stem failure. In order to reduce the risk of a stem failure, a cable or brace rod can be installed between the stems to reduce this risk. Blue Atlas cedar #1705 was the only tree assessed at Scott Lane Elementary School that was a candidate for a cable/brace.

- **Removal** – Where trees were in decline or were structurally unstable, they were identified for removal. Removal of a *Protected* tree, as established in the City of Santa Clara's General Plan Conservation Policy 5.10.1-P4, may require a removal permit.
    - Seventeen (17) trees were dead or in decline and should be removed, all of which qualified as *Protected*.

- **Monitor health** – Where trees were showing signs of decline or the species is known to not perform well over time, they were recommended for annual monitoring for changes in health and structure. These are trees we expect to continue to decline irrespective of management. Following inspections, additional management may be required.
    - Six (6) trees were showing signs of decline and should be monitored annually for changes in health and structure.

- **Root pruning** – Where displacement of infrastructure has occurred, trees may require root pruning when repairs are made. Roots should be exposed by hand to beyond the limit of the infrastructure and cut with a chain saw, hand saw, or other approved root pruning equipment. The Consulting Arborist should be present during root pruning operations to identify where root pruning is required and monitor root pruning activities.
    - Nineteen (19) trees were displacing the surrounding asphalt from 1" to 8" and are candidates for root pruning.

- **Aerial inspection** – Where defects in structure are present in the tree crown that cannot be adequately assessed visually from the ground, an aerial inspection is recommended. The goal of the aerial inspection is to perform a closer inspection of the defect in an effort to determine the severity of the defect and what management options exist.
    - Chinese elm #1682 had a cavity in the stem attachment at ~12' that should be inspected from within the tree

- **Mulching -** Mulches provide aesthetic, economic and environmental benefits to the landscape. In general, mulches improve soil health, improve water holding capacity of the soil and return nutrients to the soil as they break down. Mulched landscapes are more resistant to stress, are more aesthetically pleasing, require fewer applications of pesticides and fertilizers, and are ultimately more sustainable than those without mulch cover. I recommend a 3-4" layer of course, wood chip mulch, spread within the dripline of trees. Use of wood chips produced through pruning of trees as mulch is acceptable.

Table 4. Tree Maintenance Recommendations
Scott Lane Elementary School, Santa Clara CA

Tree No.	Common Name	Trunk Diameter	Protected	Recommendation
1595	Coast redwood	25	Yes	Root prune
1597	Coast redwood	32	Yes	Root prune
1601	White mulberry	21	Yes	**Remove**
1602	White mulberry	21	Yes	Monitor health
1603	White mulberry	24	Yes	Monitor health
1606	Holly oak	23	Yes	Root prune
1608	Holly oak	20	Yes	Root prune
1609	Holly oak	23	Yes	Root prune
1610	Holly oak	27	Yes	Prune to reduce branch weight & ext.
1611	Holly oak	32	Yes	Prune to reduce branch weight & ext.
1612	Holly oak	22	Yes	Prune to reduce branch weight & ext.
1615	Honey locust	12	Yes	**Remove**
1617	Honey locust	18	Yes	**Remove**
1618	Honey locust	16	Yes	**Remove**
1619	Honey locust	15	Yes	**Remove**
1621	Mayten	12	Yes	**Remove**
1622	Mayten	15	Yes	**Remove**
1624	Australian willow	12	Yes	**Remove**
1631	Australian willow	24	Yes	**Remove**
1632	Australian willow	16	Yes	Root prune
1633	Australian willow	19	Yes	Root prune
1647	Italian stone pine	13	Yes	**Remove**
1648	Italian stone pine	14	Yes	**Remove**
1650	Italian stone pine	18,11	Yes	Prune to reduce branch weight & ext.
1654	Italian stone pine	14,13	Yes	**Remove**
1656	Coast redwood	32	Yes	Root prune
1657	Coast redwood	32	Yes	Root prune
1662	Coast redwood	27,9	Yes	Root prune
1663	Italian stone pine	32	Yes	**Remove**
1664	Coast redwood	39	Yes	Root prune
1666	Silver dollar gum	25	Yes	Root prune
1671	Coast redwood	55	Yes	Prune to reduce branch extension
1678	Coast redwood	28	Yes	Monitor health
1679	Coast redwood	44	Yes	Monitor health
1680	Coast redwood	56	Yes	Root prune
1682	Chinese elm	17	Yes	Aerial inspection
1683	Chinese elm	27	Yes	Root prune
1684	Holly oak	22	Yes	Root prune

(**Continued, following page**)

Table 4. Tree Maintenance Recommendations, continued
Scott Lane Elementary School, Santa Clara CA

Tree No.	Common Name	Trunk Diameter	Protected	Recommendation
1685	Chinese elm	21	Yes	Root prune
1686	Chinese elm	16	Yes	Root prune
1689	Monterey pine	25	Yes	Prune to reduce branch weight & extension
1692	Deodar cedar	32	Yes	Prune to remove defective part
1698	Southern magnolia	19	Yes	Root prune
1704	Sawleaf zelkova	23	Yes	Prune to remove defective part
1705	Blue atlas cedar	19,18,12	Yes	Cable/brace
1706	Sawleaf zelkova	27	Yes	Monitor health
1707	Sawleaf zelkova	23	Yes	Prune to clean crown
1708	Sawleaf zelkova	24	Yes	Prune to clean crown
1709	Sawleaf zelkova	26	Yes	Prune to clean crown
1710	Mayten	20	Yes	Monitor health
1712	Australian willow	16	Yes	**Remove**
1713	Australian willow	20	Yes	**Remove**
1714	Modesto ash	27	Yes	Root prune
1715	Carob	28	Yes	**Remove**
1716	Olive	8	Yes	**Remove**

Preliminary Tree Preservation Guidelines

The following recommendations will help reduce impacts to trees from development as well as maintain and improve their health and vitality through the clearing, grading and construction phases.

Design recommendations

1. Have the vertical and horizontal locations of all the trees identified for preservation established and plotted on all plans. Forward these plans to the Consulting Arborist for review and comment.

2. All plans affecting trees shall be reviewed by the Consulting Arborist with regard to tree impacts. These include, but are not limited to, demolition plans, grading and utility plans, landscape and irrigation plans.

3. For trees identified for preservation, designate a **TREE PROTECTION ZONE** in which no construction, grading and underground services including utilities, sub-drains, water or sewer will be located. For design purposes, the **TREE PROTECTION ZONE** should be either the dripline or edge of proposed construction, whichever is larger. Depending in the tree to be preserved, additional space beyond the dripline may be required.

4. No grading, excavation, construction or storage of materials shall occur within that zone.

5. No underground services including utilities, sub-drains, water or sewer shall be placed in the **Tree Protection Zone**.

6. Irrigation systems must be designed so that no trenching will occur within the **Tree Protection Zone**.

7. As trees withdraw water from the soil, expansive soils may shrink within the root area. Therefore, foundations, footings and pavements on expansive soils near trees should be designed to withstand differential displacement.

8. Maintain the existing irrigation system. If the existing irrigation system is not functional, have a temporary system installed (using soaker hoses or pvc laid on the ground and covered with mulch) as soon as possible to supply the trees with water and help them recover and prepare them for impacts associated with the demolition and construction process.

Pre-construction treatments and recommendations

1. The demolition contractor shall meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection.

2. Where possible, cap and abandon all existing underground utilities within the **TPZ** in place. Removal of utility boxes by hand is acceptable but no trenching should be performed within the **TPZ** in an effort to remove utilities, irrigation lines, etc.

3. Fence all trees to be retained to completely enclose the **Tree Protection Zone** prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link or equivalent as approved by the Consulting Arborist. Fences are to remain until all grading and construction is completed.

4. Prune trees to be preserved to clean the crown of dead branches 1" and larger in diameter and raise canopies as needed for construction activities. All pruning shall be done by a State of California Licensed Tree Contractor (C61/D49). All pruning shall be done by Certified Arborist or Certified Tree Worker in accordance with the Best Management Practices for Pruning (International Society of Arboriculture, 2002) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300). The Consulting Arborist will provide pruning specifications prior to site demolition. Branches extending into the work area that can remain following demolition shall be tied back and protected from damage.

5. All tree work shall comply with the Migratory Bird Treaty Act as well as California Fish and Wildlife code 3503-3513 to not disturb nesting birds. Tree pruning and removal should be scheduled outside of the breeding season to avoid scheduling delays. Breeding bird surveys should be conducted prior to tree work. Qualified biologists should be involved in establishing work buffers for active nests.

6. Tree(s) to be removed that have branches extending into the canopy of tree(s) to remain must be removed by a qualified arborist and not by construction contractors. The qualified arborist shall remove the tree in a manner that causes no damage to the tree(s) and understory to remain. Tree stumps shall be ground 12" below ground surface.

7. Any brush clearing required within the **TREE PROTECTION ZONE** shall be accomplished with hand-operated equipment.

8. Trees to be removed shall be felled so as to fall away from **TREE PROTECTION ZONE** and avoid pulling and breaking of roots of trees to remain. If roots are entwined, the consultant may require first severing the major woody root mass before extracting the trees, or grinding the stump below ground.

9. All down brush and trees shall be removed from the **TREE PROTECTION ZONE** either by hand, or with equipment sitting outside the **TREE PROTECTION ZONE**. Extraction shall occur by lifting the material out, not by skidding across the ground.

10. Apply and maintain 4-6" of wood chip mulch within the **TREE PROTECTION ZONE.**

Recommendations for tree protection during construction

1. Prior to beginning work, the contractors working in the vicinity of trees to be preserved are required to meet with the Consulting Arborist at the site to review all work procedures, access routes, storage areas and tree protection measures.

2. All contractors shall conduct operations in a manner that will prevent damage to trees to be preserved.

3. Any grading, construction, demolition or other work that is expected to encounter tree roots should be monitored by the Consulting Arborist.

4. Tree protection fences are to remain until all site work has been completed. Fences may not be relocated or removed without permission of the Consulting Arborist.

5. Construction trailers, traffic and storage areas must remain outside fenced areas at all times.

6. Currently, trees #1595, 1597, 1606, 1608, 1609, 1632, 1633, 1656, 1657, 1662, 1664, 1666, 1680, 1683-1686, 1698 and 1714 have been identified for root pruning prior to grading, excavation for foundations/footings/walls, trenching. Root pruning should occur outside the **TREE PROTECTION ZONE** and **prior to demolition or construction activities** by cutting all roots cleanly to the depth of the excavation. Roots shall be cut by manually digging a trench and cutting exposed roots with a saw, with a vibrating knife, rock saw, narrow trencher with sharp blades, or other approved root pruning equipment. The Consulting Arborist will identify where root pruning is required and monitor all root pruning activities.

7. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.

8. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **Tree Protection Zone**.

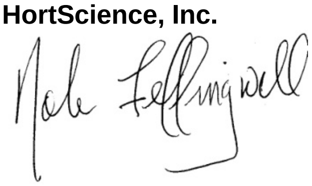
9. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

10. All trees shall be irrigated on a schedule to be determined by the Consulting Arborist (every 3 to 6 weeks April through October is typical). Each irrigation shall wet the soil within the **TREE PROTECTION ZONE** to a depth of 24”.

Maintenance of impacted trees

Preserved trees will experience a physical environment different from that pre-development. As a result, tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required. In addition, provisions for monitoring both tree health and structural stability following construction must be made a priority. As trees age, the likelihood of failure of branches or entire trees increases. Therefore, annual inspection for structural condition is recommended.

HortScience, Inc.



John Leffingwell
Board Certified Master Arborist #WE-3966B
Registered Consulting arborist #442

Exhibits

Tree Assessment Form

Tree Assessment Map

Tree Assessment

Scott Lane Elementary School
Santa Clara, CA
December 2018

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
1595	Coast redwood	25	Yes	4	Moderate	Crowded; one sided N. ; displacing sidewalk 3”.
1596	Coast redwood	17	Yes	3	Moderate	Crowded; narrow form; a little sparse.
1597	Coast redwood	32	Yes	4	Moderate	Crowded; one sided E. ; displacing sidewalk 3”.
1598	Coast redwood	28	Yes	4	Moderate	Crowded; one sided S.; a little sparse.
1599	Coast redwood	21	Yes	3	Moderate	Crowded; one sided SW.; a little sparse; crook in upper crown.
1600	Crape myrtle	5	No	5	High	Codominant trunks at 4’; good young tree.
1601	White mulberry	21	Yes	2	Low	Codominant trunks at 4’; topped at 25’; trunk wounds w/ decay.
1602	White mulberry	21	Yes	3	Moderate	Codominant trunks at 6’; topped at 25’; trunk wounds; displacing retaining wall 2”.
1603	White mulberry	24	Yes	3	Moderate	Codominant trunks at 4’; topped at 25’; one sided N.; trunk wounds.
1604	Blue atlas cedar	4	No	3	Moderate	Small crown; topped at 5’; weeping form.
1605	Holly oak	31	Yes	4	Moderate	Multiple attachments at 10’; leans E.; slightly sparse; in raised planter.
1606	Holly oak	23	Yes	3	Moderate	Multiple attachments at 4’; narrow form; slightly sparse; displacing asphalt 2”.
1607	Holly oak	26	Yes	4	Moderate	Multiple attachments at 6’; lateral S.; slightly sparse.
1608	Holly oak	20	Yes	4	Moderate	Multiple attachments at 5’; one sided E..; slightly sparse crown; displacing asphalt 2’.
1609	Holly oak	23	Yes	3	Low	Multiple attachments at 5’; one sided S..; large trunk wound w/ decay; displacing asphalt 2”.
1610	Holly oak	27	Yes	3	Moderate	Multiple attachments at 5’; one sided S..; laterals SW.; history of branch failure.
1611	Holly oak	32	Yes	3	Moderate	Multiple attachments at 5’; very one sided S..; laterals SW.
1612	Holly oak	22	Yes	3	Moderate	Codomimant trunks at 7’; very one sided S..; laterals SW.
1613	Holly oak	16,15	Yes	4	High	Codomimant trunks at 3’; upright form
1614	Honey locust	15	Yes	4	High	Codomimant trunks at 5’; one sided W.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
1615	Honey locust	12	Yes	3	Low	Multiple attachments at 7'; upright form; large basal wounds w/ decay.
1616	Honey locust	15	Yes	4	High	Multiple attachments at 6'; upright form; small trunk wound.
1617	Honey locust	18	Yes	3	Moderate	Codomimant trunks at 8'; upright form; large trunk wound S.; ganoderma.
1618	Honey locust	16	Yes	3	Moderate	Codomimant trunks at 8'; low lateral SE.; sunscald on branches; large trunk wound S.; ganoderma.
1619	Honey locust	15	Yes	3	Low	Multiple attachments at 7'; upright form; large basal wounds w/ decay; ganoderma.
1620	Mayten	10,9,8	Yes	3	Moderate	Multiple attachments at 3'; one sided N.; trunk wounds.
1621	Mayten	12	Yes	2	Low	Extensive dieback; trunk wounds.
1622	Mayten	15	Yes	0	Low	Dead.
1623	Australian willow	14	Yes	3	Moderate	Codominant trunks at 3'; narrow attachment; crowded & one sided NW.
1624	Australian willow	12	Yes	3	Low	Codominant trunks at 4'; trunk sweeps W.; poor form.
1625	Australian willow	18	Yes	3	Moderate	Multiple attachments at 5'; narrow attachments; trunk sweeps W.
1626	Australian willow	12	Yes	3	Moderate	Codominant trunks at 4'; upright, narrow form.
1627	Australian willow	15	Yes	3	Moderate	Multiple attachments at 5'; narrow attachments; narrow form.
1628	Australian willow	16	Yes	3	Moderate	Multiple attachments at 5'; narrow attachments; one stem bowed N.
1629	Australian willow	13	Yes	3	Moderate	Multiple attachments at 5'; narrow attachments; one sided W.
1630	Australian willow	13	Yes	3	Moderate	Codominant trunks at 5'; small, suppressed crown.
1631	Australian willow	24	Yes	3	Low	Multiple attachments at 3'; S. stem removed; poor form and structure; displacing asphalt 2".
1632	Australian willow	16	Yes	3	Moderate	Codominant trunks at 6'; narrow attachment; crown sweeps W.; displacing asphalt 1".
1633	Australian willow	19	Yes	3	Moderate	Multiple attachments at 6'; narrow attachment; one sided W.; displacing asphalt 2".

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
1634	Australian willow	15	Yes	3	Moderate	Multiple attachments at 6'; narrow attachment; upright form.
1635	Holly oak	9	Yes	3	Moderate	Codomimant trunks at 10'; growing against storage container.
1636	Holly oak	8	Yes	3	Moderate	Multiple attachments at 8'; one sided E.
1637	Silver dollar gum	22	Yes	3	Moderate	Off site; codominant trunks at 7'; leans N over school prop.; growing against fence.
1638	Silver dollar gum	28	Yes	3	Moderate	Property line tree; multiple attachments at 8'; upright form.
1639	Coast redwood	20,18	Yes	4	Moderate	Codominant trunks at 3'; upright form; sparse crown.
1640	Italian stone pine	27	Yes	3	Moderate	Codominant trunks at 8'; crowded & bowed NW.
1641	Coast redwood	25	Yes	4	High	Crowded; one sided NW.; dense crown.
1642	Italian stone pine	21,19	Yes	3	Moderate	Codominant trunks at 4'; high crown bowed NW.
1643	Coast redwood	22,9	Yes	3	Moderate	Codominant trunks at base; 9" stem lost top; sparse crown.
1644	Italian stone pine	20,18	Yes	4	Moderate	Codominant trunks at 2'; a little one sided N.
1645	Italian stone pine	18	Yes	4	Moderate	High crown; small lateral E.
1646	Italian stone pine	21	Yes	3	Moderate	High crown; somewhat corrected lean N.
1647	Italian stone pine	13	Yes	2	Low	Small crown bowed N. to horizontal.
1648	Italian stone pine	14	Yes	3	Low	Codominant trunks at 12'; bowed N. to horizontal.
1649	Italian stone pine	15,13	Yes	3	Moderate	Codominant trunks at 2'; one sided & leaning N.
1650	Italian stone pine	18,11	Yes	3	Moderate	Codominant trunks at 2'; one sided & leaning N.; long lateral N.
1651	Italian stone pine	13	Yes	3	Low	Somewhat corrected lean N.
1652	Italian stone pine	10	No	3	Low	Somewhat corrected lean N.; small, high crown.
1653	Italian stone pine	18,17	Yes	3	Moderate	Codominant trunks at 2'; one sided & bowed N.
1654	Italian stone pine	14,13	Yes	3	Low	Codominant trunks at 4'; leaning & one sided N.
1655	Italian stone pine	19	Yes	3	Moderate	Leaning & one sided N.
1656	Coast redwood	32	Yes	4	High	Good form an structure; slightly sparse crown; displacing sidewalk 2".

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
1657	Coast redwood	32	Yes	5	High	Good form an structure; full, dense crown; displacing sidewalk 3”.
1658	Coast redwood	5	Yes	4	High	Good young tree; sparse in upper crown.
1659	Italian stone pine	23,19	Yes	4	Moderate	Codominant trunks at 2’; leans N.
1660	Italian stone pine	12	Yes	3	Moderate	Suppressed; upper crown bowed N.
1661	Italian stone pine	26	Yes	3	Moderate	Crook in upper crown; leans N.; displacing sidewalk 3”.
1662	Coast redwood	27,9	Yes	4	High	Cofominant trunks at 3’; slightly sparse crown; displacing sidewalk 3”.
1663	Italian stone pine	32	Yes	3	Low	Codominant trunks at 5’; seam in attachment; poor form and structure; heavy lateral S.; pruned for overhead utilities; displacing sidewalk 2”
1664	Coast redwood	39	Yes	4	Moderate	Codominant trunks in upper crown; slightly sparse crown; displacing sidewalk 4”.
1665	Italian stone pine	7	No	3	Moderate	Suppressed; sparse. crown.
1666	Silver dollar gum	25	Yes	3	Moderate	Fence line tree; leans N.; pruned for overhead utilities; displacing sidewalk 2”.
1667	Coast redwood	39	Yes	4	High	Cofominant trunks at 4’; narrow attachment; lost top; slightly sparse crown.
1668	Coast redwood	46	Yes	4	High	Crowded; one sided S.; slightly sparse crown.
1669	Coast redwood	25	Yes	4	Moderate	Crowded; corrected lean S.; slightly sparse crown.
1670	Coast redwood	34	Yes	4	High	Crowded; one sided N.; slightly sparse crown.
1671	Coast redwood	55	Yes	4	Moderate	Codominant trunks at 10’; seam in attachment; sparse crown.
1672	Coast redwood	40	Yes	4	High	Crowded; one sided SE.; slightly sparse crown.
1673	Coast redwood	34,24	Yes	4	Moderate	Codominant trunks at 2’; one sided NW.; lost tops; sparse crown.
1674	Coast redwood	55,12	Yes	4	Moderate	Codominant trunks at 3’ & 10’’; one sided E.; sparse crown.
1675	Coast redwood	28	Yes	4	Moderate	Crowded; one sided N.; sparse crown.
1676	Coast redwood	30	Yes	4	Moderate	Crowded; high, narrow crown; sparse.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
1677	Coast redwood	40	Yes	4	Moderate	Crowded; one sided N.; sparse crown.
1678	Coast redwood	28	Yes	3	Moderate	Crowded; very one sided S.; sparse crown.
1679	Coast redwood	44	Yes	3	Moderate	Crowded; crown & root ball one sided N.; sparse ; root injuries & decay.
1680	Coast redwood	56	Yes	4	High	Codominant trunks in upper crown; one sided SW.; dense crown; displacing asphalt 3”.
1681	Chinese elm	13,13,12	Yes	3	Moderate	Multiple attachments at 2’; topped at 20’.
1682	Chinese elm	17	Yes	3	Moderate	Codominant trunks at 12’; cavity in attachment; topped at 20’.
1683	Chinese elm	27	Yes	3	Moderate	Codominant trunks at 4’; pruning wounds; topped at 20’; displacing asphalt 3”.
1684	Holly oak	22	Yes	4	Moderate	Multiple attachments at 10’; upright form; dieback; displacing asphalt 2”.
1685	Chinese elm	21	Yes	3	Moderate	Multiple attachments at 8’; topped at 20’; displacing asphalt 2”
1686	Chinese elm	16	Yes	3	Moderate	Slight lean N.; topped at 20’; displacing asphalt 1”
1687	Jacaranda	13	Yes	4	Moderate	Multiple attachments at 7’; one sided S.; fair structure.
1688	Jacaranda	10	No	4	Moderate	Multiple attachments at 7’; one sided S.; fair structure.
1689	Monterey pine	25	Yes	2	Low	Off-site; topped for overhead utilities; long lateral S. over school.
1690	Coast redwood	42	Yes	3	Low	No tag, not accessible; codominant trunks at 10’; seam in attachment; pruned hard N. for overhead utilities.
1691	Coast redwood	34	Yes	3	Low	No tag, not accessible; sparse crown; pruned hard N. for overhead utilities.
1692	Deodar cedar	32	Yes	4	Moderate	One sided N.; pruned S. for overhead utilities; 6” hanger N.
1693	Deodar cedar	37	Yes	4	High	Good form and structure; pruned S. for overhead utilities.
1694	Holly oak	10	Yes	3	Moderate	Multiple attachments at 7’; one sided N.; dieback.
1695	Southern magnolia	16,12	Yes	4	Moderate	Codominant trunks at 3’ & 6’; upright form; dieback.
1696	Holly oak	16	Yes	4	High	Codominant trunks at 8’; narrow form.
1697	Southern magnolia	16	Yes	4	Moderate	Multiple attachments at 6’; narrow form; dieback.

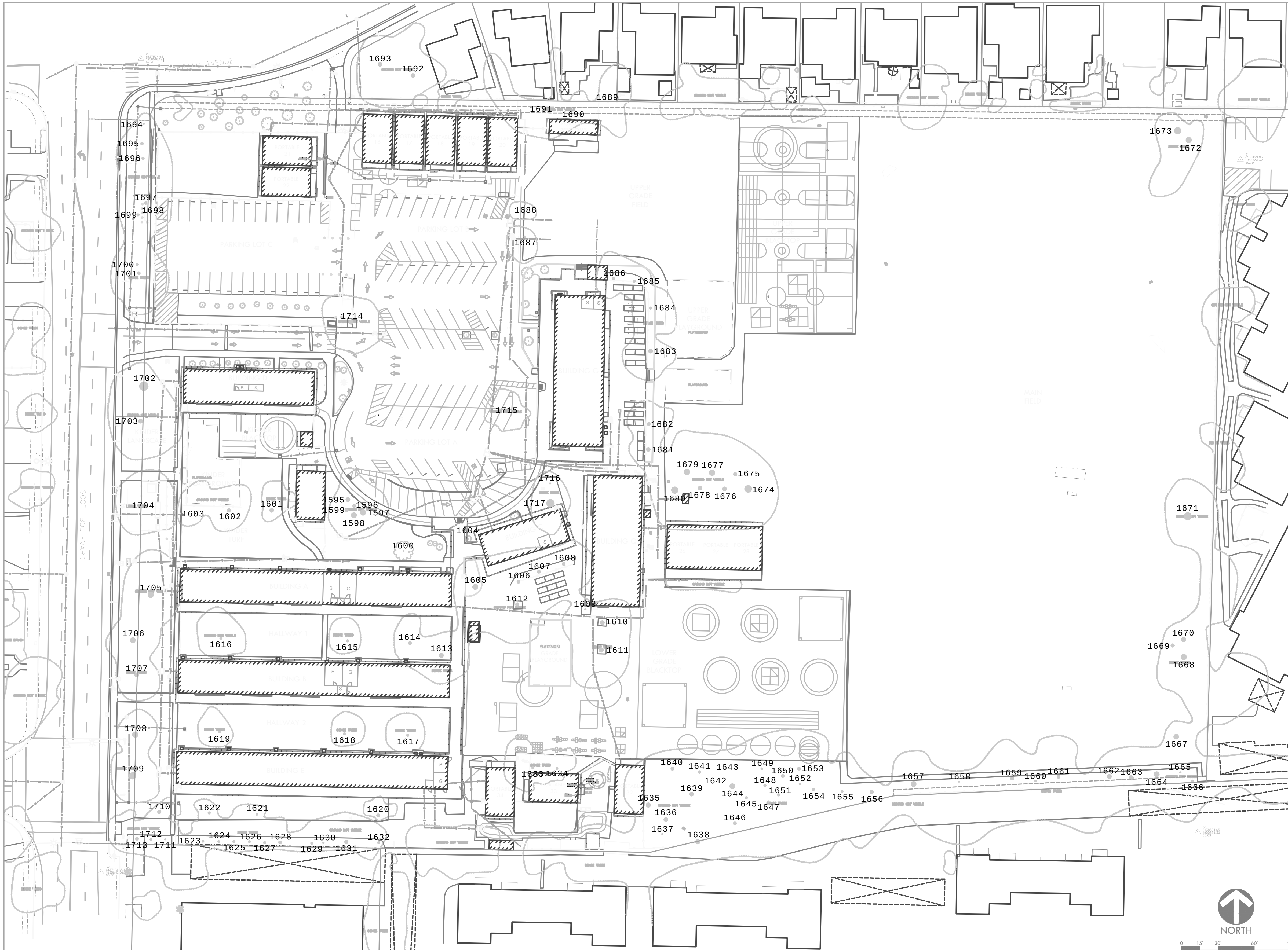
Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
1698	Southern magnolia	19	Yes	4	Moderate	Multiple attachments at 10'; narrow form; dieback; displacing sidewalk 3".
1699	Southern magnolia	16	Yes	4	Moderate	Multiple attachments at 4'; one sided W.; dieback.
1700	Southern magnolia	18	Yes	4	Moderate	Multiple attachments at 6'; one sided N.; dieback.
1701	Holly oak	20	Yes	4	High	Multiple attachments at 7'; one sided S.
1702	Coast redwood	62	Yes	4	High	Codominant trunks at 8'; good form and structure; pruned W. for overhead utilities.
1703	Sawleaf zelkova	22	Yes	4	Moderate	Multiple attachments at 8'; one sided S.; pruned W. for overhead utilities; twig dieback.
1704	Sawleaf zelkova	23	Yes	4	Moderate	Tag on fence; multiple attachments at 8'; small hanger S.; pruned W. for overhead utilities; twig dieback.
1705	Blue atlas cedar	19,18,12	Yes	3	Low	Codominant trunks at base; stems wedging each other apart; wound & crack at attachment.
1706	Sawleaf zelkova	27	Yes	3	Moderate	Multiple attachments at 7'; topped at 25'; pruned W. for overhead utilities; moderate dieback.
1707	Sawleaf zelkova	23	Yes	3	Low	Multiple attachments at 7'; topped at 25'; pruned W. for overhead utilities; extensive twig dieback.
1708	Sawleaf zelkova	24	Yes	3	Low	Multiple attachments at 10'; some dead stems; topped at 25'; pruned W. for overhead utilities; extensive twig dieback.
1709	Sawleaf zelkova	26	Yes	3	Moderate	Multiple attachments at 10'; topped at 25'; pruned W. for overhead utilities; moderate twig dieback.
1710	Mayten	20	Yes	3	Low	Codominant trunks at 6'; small crown; dieback.
1711	Australian willow	11	No	3	Moderate	Codominant trunks at 6'; upright, narrow form.
1712	Australian willow	16	Yes	3	Low	Codominant trunks at 4'; crack in attachment; poor form and structure; displacing asphalt 2".
1713	Australian willow	20	Yes	3	Low	Codominant trunks at 8'; narrow attachments; poor form and structure; displacing asphalt 5".

Tree Assessment

Scott Lane Elementary School
Santa Clara, CA
December 2018

HORT SCIENCE | BARTLETT CONSULTING

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
1714	Modesto ash	27	Yes	4	Moderate	Multiple attachments at 8'; crown reduced; mistletoe; in small cut-out; displacing asphalt 8".
1715	Carob	28	Yes	2	Low	Multiple attachments at 6'; topped; in small cut-out; possible sulfur fungus; displacing asphalt 6".
1716	Olive	8	Yes	2	Low	Topped; extensive decay.
1717	Coast redwood	42	Yes	5	High	Excellent form and structure; full, dense crown.



Existing Site Conditions

Scott Lane Elementary School
1925 Scott Blvd.
Santa Clara, CA 95050

Tree Assessment Plan

Santa Clara Unified School District

HortScience | Bartlett Consulting
325 Ray Street
Pleasanton, CA 94566
Phone 925.484.0211
Fax 925.484.0596
www.hortscience.com

VERDE DESIGN
June 2, 2019

LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
2455 The Alameda, Ste. 200
Santa Clara, CA 95050
tel: 408.985.7200
fax: 408.985.7260
www.verdedesigninc.com

Appendix C: Archaeological Review
Basin Research Associates,
Revised July 9, 2024

[Confidential – held on file at the District]

Appendix D: Geotechnical Study

Geologic and Seismic Hazards Evaluation

GEOTECHNICAL STUDY
PROPOSED IMPROVEMENTS TO
SCOTT LANE ELEMENTARY SCHOOL

1925 SCOTT BOULEVARD
SANTA CLARA, CALIFORNIA

SEPTEMBER 9, 2022
PROJECT NO. PA22.1033.00

SUBMITTED TO:

Santa Clara Unified School District
1889 Lawrence Road
Santa Clara, CA 95051

PREPARED BY:

Geo-Logic Associates
6300 San Ignacio, Suite A
San Jose, California 95119
(408) 778-2818

GEOTECHNICAL STUDY
PROPOSED SCOTT LANE ELEMENTARY SCHOOL IMPROVEMENTS
1925 SCOTT BOULEVARD
SANTA CLARA, CALIFORNIA

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Results of Liquefaction Analysis

1 INTRODUCTION

This report presents the results of our geotechnical study for the proposed improvements to Scott Lane Elementary School located at 1925 Scott Boulevard, Santa Clara, California. The approximate location of the school campus is shown on the Vicinity Map included with the Site Plan, Figure 1, of this report. Figure 1 shows a layout of the existing and proposed improvements.

This report presents our findings, conclusions, and geotechnical recommendations for design and construction of the proposed improvements. These findings, conclusions, and recommendations are based on information collected and reviewed during this study. The conclusions and recommendations in this report should not be extrapolated to other areas or used for other projects without our review.

Our firm is preparing a geologic and seismic hazards evaluation report for the project and the results of that study are presented in our geologic and seismic hazards evaluation report dated September 9, 2022, Project PA22.1033.

1.1 Project Description

The project will involve relocation of two existing portable buildings from the northwestern portion of the campus to the north-central portion of the campus, construction of a new portable building next to the two relocated portables, expansion and reconfiguration of the existing parking lot in the northwestern portion of the campus, new access driveways to the existing parking lot, new bicycle storage area, new TK play yard, new asphalt concrete pathways, and demolition of existing Building F.

Site grading associated with the proposed improvements is anticipated to involve cuts and fills of up to about 2 to 3 feet because of the essentially flat-lying topography across the project area. Deeper excavations will be necessary for installation of underground utilities.

The above project descriptions are based on information provided to us. If the actual project differs from those described above, Geo-Logic Associates (GLA) should be contacted to review our findings, conclusions, and recommendations and present any necessary modifications to address the different project development schemes.

1.2 Information Provided

The following information was provided to us for this study.

- Draft Master Plan drawings for Scott Lane Elementary School, dated August 16, 2022.
- An undated and untitled sketch showing designated boring locations.

- An undated and untitled drawing showing a layout of the existing improvements in the western portion of the campus.

1.3 Previous Studies by GLA

In 2014, our firm performed a geohazards evaluation and a geotechnical study for a portable building at the school, with preparation of the following documents.

- A report titled "Geotechnical Investigation, Proposed Portable Building, Scott Lane Elementary School, 1925 Scott Boulevard, Santa Clara, California," dated May 16, 2014.

- A report titled "Geohazards Evaluation, Proposed Portable Building, Scott Lane Elementary School, 1925 Scott Boulevard, Santa Clara, California," dated May 16, 2014.

1.4 Objective and Scope of Services

The objective of this study was to explore subsurface conditions at the sites of the proposed improvements, and to provide geotechnical recommendations for design and construction of these improvements. To achieve our objective, the following work was performed.

1. Reviewed information from our current geohazards evaluation, and our previous geohazards and geotechnical studies listed in Section 1.3 above.

2. Performed a site reconnaissance to observe site conditions and to mark locations of our subsurface exploration.

3. Notified Underground Service Alert of our exploration.

4. Coordinated our field exploration with the District.

5. Subcontracted with a professional underground services locator to check the proposed exploration locations for presence of buried utilities.

6. Obtained a drilling permit from Santa Clara Valley Water District for our subsurface exploration work.

7. Performed subsurface exploration by means of nine exploratory drill holes.

8. Performed laboratory testing on selected soil samples recovered from the drill holes.

9. Performed engineering analysis on the collected field and laboratory data.

10. Prepared this geotechnical study report.

2 SITE INVESTIGATION

The site investigation consisted of a site reconnaissance and a subsurface exploration program. The site reconnaissance was to observe existing site surface conditions. The subsurface exploration program was to explore earth conditions at the project site. The observed surface and subsurface site conditions are discussed in Section 3 of this report.

2.1 Subsurface Exploration – This Study

Our geotechnical subsurface exploration program included nine exploratory drill holes (DH-1 through DH-9). The drill holes were advanced on August 9, 2022, using a truck-mounted Mobile B-53R drilling rig to depths between 10 and 50 feet bgs. The drill holes were located in the field by referencing to existing site features and pacing; therefore, their locations are approximate. These approximate exploration locations are shown on Figure 1 of this report.

Soil samples were obtained using a 3-inch O.D. (2½-inch I.D.) split-barrel sampler. Soil samples were obtained by driving the samplers up to 18 inches into the earth material using a 140-pound automatic trip hammer falling 30 inches in DH-3 and DH-6. A down-hole safety hammer was used for the remaining drill holes. The number of blows required to drive the sampler was recorded for each 6-inch penetration interval. The number of blows required to drive the sampler the last 12 inches, or the penetration interval indicated on the log when harder material was encountered, is shown as blows per foot (blow count) on the drill hole logs.

In the field, our personnel visually classified the materials encountered and maintained a log of each drill hole. Visual classification of soils encountered in our drill holes was made in general accordance with the Unified Soil Classification System (ASTM D 2487 and D 2488). The results of our laboratory tests were used to refine our field classifications. Two Keys to Soil Classification, one for fine grained soils and one for coarse grained soils, are included in Appendix A, together with our drill hole logs.

2.2 Laboratory Testing – This Study

Geotechnical laboratory testing was conducted on selected soil samples collected from our drill holes and on a bulk sample collected from the parking lot area. These tests included moisture content, dry density, Atterberg limits, sieve analysis, percentage passing a No. 200 sieve, and R-value. The laboratory test results are presented on the drill hole logs at the corresponding sample depths. Graphic presentations of the results of the Atterberg limits, sieve analysis, and R-value tests are presented on separate sheets in Appendix B of this report.

In addition to geotechnical testing, a selected soil sample was sent to CERCO Analytical for corrosivity testing. A brief report from CERCO Analytical with the corrosivity test results is included in Appendix B.

2.3 Subsurface Exploration and Laboratory Testing – GLA 2014 Study

Our 2014 subsurface exploration program included two exploratory drill holes (DH-1 and DH-2) and one CPT probe (CPT-1). The drill holes were advanced on April 19, 2014 with a truck-mounted Mobile B53 drilling rig equipped with 8-inch-diameter hollow-stem augers, to depths of about 15 and 20 feet bgs. CPT-1 was performed by John Sarmiento & Associates on April 19, 2014, to a depth of about 45 feet bgs. Logs of the drill holes and CPT-1 from our 2014 study are included in Appendix A and the approximate locations of these drill holes and CPT probe are also shown on Figure 1 of this report.

The results of our laboratory testing during our 2014 study were presented on our 2014 drill hole logs and on separate laboratory data sheets. The laboratory data sheets are included in Appendix B of this report.

3 FINDINGS

3.1 Surface Conditions

The school property is bordered by Scott Boulevard on the west, residential properties and Cabrillo Avenue to the north, apartment complexes and Warburton Avenue to the south, and residential properties fronting onto Don Avenue and Monroe Street to the east. Access to the site is from Scott Boulevard. Existing improvements are located mainly in the western portion of the campus and include several permanent and portable buildings, a parking lot with access driveways, and play fields. The eastern portion of the campus is currently a grass field. There are scattered trees throughout the campus.

Topography across the campus is quite flat, and nearly level. The site surface slopes down gently towards the northeast. Total relief across the school campus is about 3 to 7 feet, based on our review of topographic information on Google Earth.

The site for the three portable buildings is located in the north-central portion of the campus, between the existing restroom building and the asphalt surface play courts.

3.2 Subsurface Conditions - This Study

Drill holes DH-1 and DH-2 were located east of classroom building F. In these two drill holes, lean clay of low plasticity was encountered to the maximum explored depth of about 10 feet below ground surface (bgs). The upper clay is very stiff to hard in consistency and the deeper clay is stiff to very stiff.

Drill hole DH-3 was located in the south-central portion of the campus. In DH-3, a layer of very stiff lean clay of low plasticity was encountered to a depth of about 9.5 feet bgs. This clay is underlain by firm to hard fat clay of high plasticity to a depth of about 27 feet bgs, medium dense to dense clayey sand to a depth of about 32 feet bgs, dense to very dense poorly graded sand to a depth of about 37.5 feet bgs, firm to stiff clay of intermediate plasticity to the maximum explored depth of about 50 feet bgs.

Drill holes DH-4, DH-5, and DH-6 were located in the existing parking lot area. A pavement section consisting of roughly 4 inches of asphalt concrete over roughly 7 inches of base was encountered at ground surface. The pavement section is underlain by lean clay of low plasticity to the maximum explored depth of 10 feet in DH-4 and DH-5, and to about 11 feet in DH-6. The clay in DH-6 from 11 feet to the bottom of the hole at 20 feet was logged as a fat clay. The clay in the upper 6 to 7 feet is stiff to hard and the deeper clay is soft to stiff.

Drill hole DH-7 was located in the new driveway area. Soil encountered in this hole consists of lean clay of low plasticity to the maximum explored depth of about 10 feet bgs. The upper clay is stiff to very stiff and the deeper clay is firm to stiff.

Drill holes DH-8 and DH-9 were located in the proposed portable building area east of the existing restroom building, in the north-central portion of the campus. In these drill holes, lean clay of low plasticity was encountered to the maximum explored depth of about 10 feet bgs. The upper clay is very stiff to hard and the deeper clay is soft to very stiff.

For a more detailed description of the earth materials encountered in our drill holes, refer to the drill hole logs in Appendix A.

3.3 Subsurface Conditions – GLA 2014 Study

A layer of hard clay was encountered in DH-1 (2014) to a depth of approximately 3 feet bgs. This surficial clay is underlain by hard sandy lean clay with gravel to a depth of about 5 feet bgs, clayey sand to sandy lean clay to a depth of about 8 feet, and firm to stiff clay to the maximum explored depth of 20 feet bgs.

In DH-2 (2014), a layer of hard clay was encountered to a depth of about 2 feet bgs. This clay is underlain by hard sandy lean clay to a depth of about 5 feet bgs, clayey sand to sandy lean clay to a depth of about 8.5 feet bgs, and firm to stiff clay to the maximum explored depth of 15 feet bgs.

In our CPT-1, the interpreted soil behavior types include predominantly cohesive soils with thin interbeds of granular soils to the maximum explored depth of about 45 feet bgs. Based on the interpreted soil properties, the cohesive soils are generally stiff to hard in consistency and the granular soils are generally medium dense in relative density.

3.4 Groundwater

Groundwater was encountered in DH-3 for this study, at a depth of about 20 feet bgs at the time of drilling and at a depth of about 37.2 feet bgs after completion of drilling. Groundwater was not encountered in the other eight drill holes for this study because they were too shallow. In our 2014 study, groundwater was encountered at a depth of about 11 feet bgs in DH-1 and at a depth about 6 feet bgs in CPT-1.

Historical high groundwater was estimated to be about 9 feet based on our review of Plate 1.2, "Depth to historically high ground water, historical liquefaction sites, and locations of boreholes, San Jose West 7.5-minute quadrangle, California," Seismic Hazard Zone Report 058, prepared by California Geological Survey, Department of Conservation, 2002.

It should be noted that fluctuations in the groundwater level may occur due to seasonal variations in rainfall and temperature, water level in the adjacent creek, pumping from wells, regional groundwater recharge program, irrigation, or other factors that were not evident at the time of our investigation.

3.5 Variations in Subsurface Conditions

Our interpretations of soil and groundwater conditions, as described in this report, are based on subsurface information collected and reviewed during this study. Our conclusions and geotechnical recommendations are based on these interpretations. Please realize the project site has undergone different phases of development and grading. Therefore, it is likely that undisclosed variations in subsurface conditions exist at the site. Careful observations should be made during construction to verify our interpretations. Should variations from our interpretations be found, we should be notified to evaluate whether any revisions should be made to our recommendations.

4 SEISMIC CONSIDERATIONS

4.1 Earthquake Faulting

The Greater San Francisco Bay Area is seismically dominated by the active San Andreas Fault system, the tectonic boundary between the northward moving Pacific Plate (west of the fault) and the North American Plate (east of the fault). This movement is distributed across a complex system of generally strike-slip, right-lateral, and subparallel faults.

Potential sources of significant earthquake ground shaking at the site include several active and potentially active faults in the Greater San Francisco Bay area, as well as faults farther afield. The faults were first compiled on the State's Fault Activity Map (Jennings, 1974; Jennings and Bryant, 2010). This map has now been integrated into the US Geological Survey's Quaternary Fault and Fold Database and made available as a .kmz "drape" over Google Earth terrain files.

The distance to a seismic source (fault) is defined by the NGA relationships as the closest distance to the seismogenic zone, be it in the subsurface or at the surface; distances may therefore differ from distances measured on the ground surface. The distances shown on the table below are for reference only, as they are horizontal distances from the site to the surface trace of the seismic source, and not necessarily the closest distance to a (dipping) seismogenic zone. These distances were measured using the US Geological Survey's Quaternary Fault and Fold Database, with major faults listed in approximate order of distance from the site; not all sources are listed in the summary table below.

Table 4.1-1 Approximate Distance and Orientation Between Site and Nearby Faults

Fault Name	Approximate Distance	Orientation from Site
Monte Vista-Shannon	10½ km	Southwest
Hayward	11¼ km	East
San Andreas (Sta. Cruz Mts)	16¼ km	Southwest
Calaveras (central segment)	16½ km	East
Sargent	24¾ km	South
Zayante-Vergeles	37 km	Southwest
San Gregorio	38¾ km	Southwest
Greenville	42¼ km	East
Monterey Bay-Tularcitos	47½ km	South

4.2 Site Class for Seismic Design

Based on our evaluation of the subsurface information and our experience with the Scott Lane Elementary School campus, a Site Class D was selected for this project following the guidelines in Section 20.4 of ASCE 7-16.

The site would normally be Site Class F because it is underlain by potentially liquefiable soils. But if the fundamental period of vibration of the proposed structures is less than 0.5 second, the site class can be determined by assuming there is no liquefaction (ASCE 7-16 Section 20.3.1). Therefore, Site Class D was selected for this project.

4.3 Ground Accelerations

According to the 2019 California Building Code (CBC) and American Society of Civil Engineers (ASCE) Standard 7-16, the spectral response acceleration at any period can be taken as the lesser of the spectral response accelerations from the probabilistic and deterministic ground motion approaches. The U.S. Seismic Design Maps tool available at the Structural Engineers Association of California (SEAOC) website was used for this purpose to retrieve seismic design parameter values for design of buildings at the subject site. Two levels of ground motions are considered in the Application: Risk-targeted Maximum Considered Earthquake (MCE_R) and Design Earthquake (DE), with both probabilistic and deterministic values defined in terms of maximum-direction rather than geometric-mean, horizontal spectral acceleration (S_a). The probabilistic MCE_R spectral response accelerations are represented by a 5 percent damped acceleration response spectrum having a 1 percent probability of collapse within a 50-year period and in the direction of the maximum horizontal response. The probabilistic Design Earthquake (DE) S_a value at any period can be taken as two-thirds of the MCE_R S_a value at the same period.

Using the SEAOC Seismic Design Maps application, a Site Class D, and the latitude and longitude of the site (latitude 37.35858º N, longitude -121.95852º W), the calculated geometric mean peak ground acceleration adjusted for site class effects (PGA_M) for the MCE_G (Geometric Mean Maximum Considered Earthquake) is 0.55g.

4.4 Seismicity

The Working Group on California Earthquake Probabilities' (WGCEP) estimates of the probabilities of major earthquakes are now in their sixth iteration, with the greatest changes in approach being the inclusion of multifold rupture scenarios, in the progressive consideration of more potential seismic sources, the possibility of earthquakes on unrecognized faults, and the inclusion of the notion of fault "readiness". Current estimates (WGCEP, 2014) for the San Francisco region indicate a 72% probability of a large (magnitude 6.7 or greater) earthquake in the San Francisco Bay area as a whole over the 30-year period beginning in 2014; this overall probability is greater than the previous (WGCEP, 2007) probability of 63%, due mainly to the inclusion of multi-fault rupture scenarios. The estimate for the Calaveras fault alone is 14.4% (revised up from the 7% presented by WGCEP, 2007); for the (northern) San Andreas fault alone, 27.4% (revised upward from the WGCEP (2007) value of 21%); and for the Hayward fault, 45.3% (revised upward from the WGCEP (2007) value of 31%).

4.5 Liquefaction

Soil liquefaction is a phenomenon in which saturated granular soils, and certain fine-grained soils, lose their strength due to build-up of excess pore water pressure during cyclic loading, such as from earthquakes. Soils most susceptible to liquefaction are saturated, clean, loose, fine-grained sands and non-plastic silts. Certain gravels, plastic silts, and clays are also susceptible to liquefaction. The primary factors affecting soil liquefaction include: 1) intensity and duration of seismic shaking; 2) soil type; 3) relative density of granular soils; 4) moisture content and plasticity of fine-grained soils; 5) overburden pressure; and 6) depth to ground water.

The project site is located in a California Geological Survey (CGS) Earthquake Zones of Required Investigation for liquefaction and a Santa Clara County liquefaction hazard zone (Santa Clara County, 2012).

We assessed the liquefaction potential at the project site based on CPT-1 from our 2014 study and DH-3 from this study. The assessment was based on a peak ground acceleration of 0.55g, earthquake moment magnitude of 7.5, and a groundwater level of 6 feet bgs. Based on CPT-1, the estimated liquefaction-induced total ground settlement is about 0.3 inch for sand soil only and about 0.65 inch for sand and clay (potential cyclic softening) soils. Based on DH-3, the estimated liquefaction-induced total ground settlement is about 0.75 inch for sand soil only and the clay soils are generally not susceptible to cyclic softening because their plasticity indices are greater than 12, based on guidelines by Bray and Sancio, 2006. The results of our liquefaction assessment are presented in Appendix C of this report.

4.6 Historical Failures

Our review of Plate 2 included with "Historic Ground Failures in Northern California Triggered by Earthquakes" prepared by T.L. Youd and S.N. Hoose, USGS Professional Paper 993, 1978, indicates there were no reports of liquefaction or lateral spreading failures in the immediate vicinity of the project site.

We also reviewed Plate 1, Map Showing Locations of Liquefaction and Associated Ground-Failure Effects Related to the Loma Prieta Earthquake, USGS Professional Paper 1551B, dated December 19, 1997, and no reports of liquefaction or lateral spreading failures were reported in the immediate vicinity of the project site.

4.7 Seismic Design Parameters

Design of the proposed structures should comply with design for structures located in seismically active areas. Structures should be designed in accordance with the requirements of governing jurisdictions and applicable building codes. GLA evaluated ASCE 7-16 seismic design parameters for the site using the SEAOC U.S. Design Maps application. The table below lists the seismic design parameters for the site. Note that, because the Mapped Spectral Acceleration at 1.0-

second Period (S_1) value for the site is larger than 0.2 g, a site response analysis may be required, in accordance with Section 11.4.8 of ASCE 7-16.

Table 4.6-1 Seismic Design Parameters Based on 2019 CBC & ASCE 7-16

Seismic Design Parameter	Value
Site Class	D
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.7
Mapped Spectral Acceleration at 0.2-second Period, S_s	1.5 g
Mapped Spectral Acceleration at 1.0-second Period, S_1	0.6 g
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	1.5 g
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	1.02 g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.0 g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.68 g
Long-period Transition Period, T_L	12 sec.

Note: The site would be Site Class F because it is underlain by liquefiable soils. But if the fundamental period of vibration of the structures is equal to or less than 0.5 second, the Site Class can be determined by assuming there is no liquefaction (ASCE 7-16 Section 20.3.1). Therefore, Site Class D was selected for this project. If the fundamental period of vibration of the structures is larger than 0.5 second, contact our office for a site-specific seismic response analysis.

5 DISCUSSION AND CONCLUSIONS

Based on our geotechnical evaluation, it is our opinion the project site may be developed as discussed in this report, provided our geotechnical recommendations are incorporated in the design and construction of the project. Our opinions, conclusions, and recommendations are based on our understanding of the proposed project, data review, properties of soils encountered in subsurface exploration, laboratory test results, and engineering analyses. Geotechnical considerations for this project are discussed below.

Geology and geohazards for the campus are presented in our Geologic and Seismic Hazards Evaluation Report dated September 9, 2022. Our conclusions on surface fault rupture and seismic ground shaking are again presented below.

5.1 Ground Rupture

The project site is not located in an Alquist-Priolo Earthquake Fault Zone. Because no active or potentially active faults are known to cross the site, it is reasonable to conclude that the risk of fault rupture through the project site is low.

5.2 Seismic Shaking

The project site is located in an area of high seismicity. Based on general knowledge of the site seismicity, it should be anticipated that, during their useful life, the proposed structures will be subject to at least one severe earthquake (magnitude 7 to 8+) that could cause considerable ground shaking at the site. It is also anticipated that the site will periodically experience small to moderate magnitude earthquakes.

5.3 Liquefaction

As presented in Section 4.5 above, potentially liquefiable sands are present at the site. The estimated liquefaction-induced total settlement would be up to about 0.75 inch, with potential differential settlements of less than about 0.4 inch. Actual settlements may be different than the estimate settlements.

5.4 Expansion Potential of Surficial Soils

Based on the results of our Atterberg limits tests on soil samples in DH-2 of this study and DH-2 of our 2014 study, the near-surface clay soils have a low plasticity which generally corresponds to a low expansion potential.

5.5 Groundwater

As discussed in Section 3.3 above, groundwater level at the project site was encountered as shallow as 6 feet bgs in CPT-1 of our 2014 study. Historical high groundwater was estimated to be about 9 feet bgs. The project designer and contractors should consider this potential high groundwater level in their design and construction. Construction below groundwater will require special considerations, including dewatering and handling of wet soils.

6 GEOTECHNICAL RECOMMENDATIONS

6.1 Earthwork

6.1.1 Site Preparation, Clearing and Stripping

Prior to construction, areas to receive improvements should be cleared of designated existing improvements, obstructions, deleterious materials, debris, abandoned or designated utility lines, designated trees, and other below grade obstacles encountered during the clearing operation. Tree stumps should be grubbed. Roots with diameter of about 1 inch or larger or length of about 3 feet or longer should be removed. Depressions, excavations, and holes that extend below the planned finish grades should be cleaned and backfilled with engineered fill compacted to the requirements given under the section of "Engineered Fill Placement and Compaction."

After clearing, any surface vegetation and organic laden soils should be removed from the site. Organic laden soils are defined as soils with more than 3 percent by weight of organic content.

6.1.2 Excavation, Temporary Construction Slopes, Shoring, and Dewatering

Excavations for this project are expected for demolition, site grading, construction of foundations, and installation of new underground utilities. Excavations and temporary construction slopes should be constructed in accordance with the current CAL-OSHA safety standards and local jurisdiction. The stability and safety of excavations, braced or unbraced, is the responsibility of the contractor. Care should be exercised when excavating in the proximity of existing structures and improvements.

Contractors are responsible for the design, installation, maintenance, and removal of temporary shoring and bracing systems. The presence of existing structures, pavements, and underground utilities must be incorporated in the design of the shoring and bracing systems.

Trench excavations adjacent to existing or proposed foundations should be above an imaginary plane having an inclination of 1½:1 (horizontal to vertical) extending down from the bottom edge of the foundations.

The presence of relatively shallow groundwater should be considered in the design and construction of excavations. Excavations extending below groundwater will require dewatering. Dewatering should lower the groundwater level to at least 2 feet below the bottom of the excavations. The design, installation, permitting, maintenance and removal of dewatering system are the responsibility of the contractor.

6.1.3 Subgrade Preparation

In areas to receive engineered fills, concrete slabs-on-grade, and pavements, the subgrade soils should be scarified to a depth of at least 8 inches, moisture-conditioned, and compacted in accordance with the recommendations given in the "Engineered Fill Placement and Compaction" section below. Prepared soil subgrades should be non-yielding. Moisture conditioning of subgrade soils should consist of adding water if the soils are too dry and allowing the soils to dry if the soils are too wet. After the subgrades are properly prepared, the areas may be raised to design grades by placement of engineered fill.

Subgrade preparation should extend at least 5 feet horizontally beyond the limits of the proposed improvements unless it is restricted by existing improvements. After the subgrades have been properly prepared, the areas may be raised to design grades by placement of engineered fill.

Wet soils should be anticipated during and after rainy months, and near and below groundwater table. Where encountered, unstable, wet or soft soil will require processing before compaction can be achieved. If construction schedule does not allow for air-drying, other means such as lime or cement treatment of the soil or excavation and replacement with suitable material may be considered. Geotextile fabrics may also be used to help stabilize the subgrade. The method to be used should be determined at the time of construction based on the actual site conditions. We recommend obtaining unit prices for subgrade stabilization during the construction bid process.

6.1.4 Materials for Fill

In general, on-site soils with an organic content of less than 3 percent by weight, free of any hazardous or deleterious materials, and meeting the gradation requirements below may be used as engineered fill to achieve project grades, except when special material (such as “non-expansive” fill or lime treatment) is required.

Engineered fill material should not contain rocks or lumps larger than 3 inches in greatest dimension, should not contain more than 15 percent of the material larger than 1½ inches, and should contain at least 20 percent passing the No. 200 sieve. In addition to these requirements, import fill should have a low expansion potential as indicated by Plasticity Index of 15 or less (per ASTM D4318), or Expansion Index of less than 20 (per ASTM D4829).

All fills should be approved by the project Geotechnical Engineer prior to delivery to the site. At least 5 working days prior to importing to the site, a representative sample of the proposed import fill should be delivered to our laboratory for evaluation. Import fills should be tested and approved for residential use per the California Department of Toxic Substances Control (DTSC) guidelines.

6.1.5 Engineered Fill Placement and Compaction

Engineered fill should be placed in horizontal lifts each not exceeding 8 inches in thickness, moisture conditioned to the required moisture content, and mechanically compacted to the recommendations below. Relative compaction or compaction is defined as the in-place dry density of the compacted soil divided by the laboratory maximum dry density as determined by ASTM Test Method D1557, latest edition, expressed as a percentage. Moisture conditioning of soils should consist of adding water to the soils if they are too dry and allowing the soils to dry if they are too wet.

Engineered fills should be compacted to at least 90 percent relative compaction with moisture content between about 1 and 3 percent above the laboratory optimum value. In pavement areas, the upper 8 inches of subgrade soil should be compacted to at least 95 percent relative compaction, at moisture content above the optimum value. Aggregate base in vehicle pavement areas should be compacted at slightly above the optimum moisture content to at least 95 percent relative compaction. Aggregate base in non-vehicular areas such as sidewalks should be compacted at slightly above the optimum moisture content to at least 90 percent relative compaction.

6.1.6 Utility Trench Backfill

Pipe zone backfill, extending from the bottom of the trench to about 1 foot above the top of pipe, may consist of free-draining sand (less than 5% passing a No. 200 sieve), lean concrete or sand cement slurry. Sand, if used as bedding, should be compacted to a minimum of 90 percent relative compaction.

Above the pipe zone, utility trenches may be backfilled with on-site soil or imported soil. Trench backfill above the bedding material should be compacted to the requirements given in the section of "Engineered Fill Placement and Compaction." Trench backfill should be capped with at least 12 inches of compacted, on-site soil similar to that of the adjoining subgrade. The backfill material should be placed in lifts not exceeding about 6 inches in uncompacted thickness. Thinner lifts may be necessary to achieve the recommended level of compaction of the backfill due to equipment limitations. Compaction should be performed by mechanical means only. Water jetting or flooding to attain compaction of backfill should not be permitted.

6.1.7 Considerations for Soil Moisture and Seepage Control

Subgrade soil and engineered fill should be compacted at moisture content meeting our recommendations. Fill should be placed over properly moisture conditioned and compacted soil subgrade as soon as possible to protect the soil from drying and wetting.

Where concrete slabs or pavements abut against landscaped areas, the base rock layer and subgrade soil should be protected against saturation. Water if allowed to seep into the subgrade soil or pavement section could reduce the service life of the improvements. Methods that may be considered to reduce infiltration of water include: 1) subdrains installed behind curbs and slabs in landscape areas; 2) vertical cut-offs, such as a deepened curb section, or equivalent, extending at least 2 inches into the subgrade soil; and 3) use of a drip or controlled irrigation system for landscape watering.

6.1.8 Wet Weather Construction

If site grading and construction is to be performed during the winter rainy months, the owner and contractors should be fully aware of the potential impact of wet weather. Rainstorms can cause delay to construction and damage to previously completed work by saturating compacted pads or subgrades, or flooding excavations.

Earthwork during rainy months will require extra effort and caution by the contractors. The contractors are responsible for protecting their work to avoid damage by rainwater. Standing pools of water should be pumped out immediately. Construction during wet weather conditions should be addressed in the project construction bid documents and/or specifications. We recommend the contractors submit a wet weather construction plan outlining procedures they will employ to protect their work and to minimize damage to their work by rainstorms.

6.2 Foundations for Portable Buildings

We understand the current plan is to support the portable buildings on non-permanent foundations. Such foundations may consist of wood blocks or metal jacks founded on top of an asphalt concrete pavement or a section of compacted Class 2 Aggregate Base. The asphalt concrete pavement section should consist of at least 2.5 inches of asphalt concrete over at least 5 inches of Class 2 Aggregate Base for support of the portable buildings. For portable buildings supported on a Class 2 Aggregate Base section, the aggregate base section should be at least 10 inches thick. The Class 2 Aggregate Base should be compacted to at least 90 percent relative compaction based on ASTM D1557. The surface of the asphalt concrete pavement or aggregate base section should be graded to provide proper drainage.

6.3 Concrete Slabs-on-Grade

Concrete slabs-on-grade for this project are expected to be exterior concrete slabs. These slabs should be constructed on subgrade soil prepared and compacted as recommended in the "Earthwork" section of this report. Soil subgrades MUST be maintained in a moist condition prior to placement of concrete for the concrete slabs. Design of reinforcement, joint spacing, etc. is the responsibility of the design engineer.

Slabs that will be covered with moisture sensitive floor coverings or where vapor transmission through the slab is undesirable should be underlain by at least 4 inches of capillary break material such as free draining, ¾-inch by No. 4 clean crushed rock. A visqueen layer should be placed over the capillary break material. The visqueen should be a high-quality polymer at least 15 mils thick that is resistant to puncture during slab construction. Laps between sheets and openings should be taped. Typically, the membrane and the slab are separated by 2 inches of sand but this should be determined by the structural engineer and architect.

Slabs that will be subject to vehicular loading should be constructed on a layer of Class 2 Aggregate Base (Caltrans Standard Specifications) at least 10 inches thick. The aggregate base should be compacted to at least 95 percent relative compaction based on ASTM D1557.

A lower water-cement ratio (0.45 to 0.50) will also help reduce the permeability of the floor slab. It should be understood that the recommended plastic membrane is not intended to waterproof the concrete slab floor. If waterproofing is desired, the project designers and/or a flooring expert should be contacted.

If desired, exterior concrete slabs-on-grade may be cast free from other adjacent structural elements by using a strip of 1/2-inch asphalt-impregnated felt divider material between the slab edges and the adjacent structural elements. Frequent construction or control joints should be provided in all concrete slabs where cracking is objectionable. Continuous reinforcing or dowels at the construction and control joints will also aid in reducing uneven slab movements.

6.4 Vehicle Pavements

Vehicle pavements for this project will include lighter traffic areas such as for automobiles and light pickup trucks, and heavier traffic areas such as for delivery trucks and garbage trucks. An R-value of less than 45 was measured on a bulk sample of soil collected from the site. For design purposes, an R-value of 25 was used to calculate the pavement sections tabulated below using the Caltrans pavement section design procedures.

DESIGN TRAFFIC INDEX	HOT MIX ASPHALT (inches)	CLASS 2 AGGREGATE BASE (inches)	TOTAL (inches)
5.0	3.0	7.0	13.0
5.5	3.0	8.0	14.5
6.0	3.5	9.0	15.5
6.5	4.0	9.0	17.5
7.0	4.5	11.0	19.0

Pavement sections should be constructed on soil subgrades that have been prepared as outlined in the “Earthwork” section of this report. The upper 8 inches of soil subgrade in pavement areas should be compacted to at least 95 percent relative compaction. The full section of aggregate base should be compacted to at least 95 percent relative compaction. Evaluation of relative compaction should be based on ASTM D1557, latest edition. The Class 2 Aggregate Base material should conform to Section 26 of the Caltrans Standard Specifications and the Class 2 Aggregate Subbase material should conform to Section 25 of the Caltrans Standard Specifications.

6.5 Surface and Subsurface Drainage

Engineering design of grading and drainage at the site is the responsibility of the project Civil

Engineer. Sufficient surface drainage should be provided to direct runoff away from structures, foundations, concrete slabs-on-grade, and pavements, and towards suitable collection and discharge facilities. Ponding of surface water should be avoided by establishing positive drainage away from improvements. Water collected should be discharged into closed pipes or towards drainage structures, and the water carried to suitable discharge points.

7 PLAN REVIEW, EARTHWORK AND FOUNDATION OBSERVATION

Post-report geotechnical services by Geo-Logic Associates (GLA), typically consisting of pre-construction design consultations and reviews and construction observation and testing services, are necessary for GLA to confirm the recommendations contained in this report. This report is based on limited sampling and investigation, and by those constraints may not have discovered local anomalies or other varying conditions that may exist on the project site. Therefore, this report is only preliminary until GLA can confirm that actual conditions in the ground conform to those anticipated in the report. Accordingly, as an integral part of this report, GLA recommends post-report, construction related geotechnical services to assist the project team during design and construction of the project. GLA requires that it perform these services if it is to remain as the project Geotechnical Engineer-of-record.

During design, GLA can provide consultation and supplemental recommendations to assist the project team in design and value engineering, especially if the project design has been modified after completion of our report. It is impossible for us to anticipate every design scenario and use of construction materials during preparation of our report. Therefore, retaining GLA to provide post-report consultation will help address design changes, answer questions and evaluate alternatives proposed by the project designers and contractors.

Prior to issuing project plans and specifications for construction bidding purposes, GLA should review the grading, drainage and foundation plans and the project specifications to determine if the intent of our recommendations has been incorporated in these documents. We have found that such a review process will help reduce the likelihood of misinterpretation of our recommendations which may cause construction delay and additional cost.

Construction phase services can include, among other things, the observation and testing during site clearing, stripping, excavation, mass grading, subgrade preparation, fill placement and compaction, backfill compaction, foundation construction and pavement construction activities.

Geo-Logic Associates would be pleased to provide cost proposals for follow-up geotechnical services. Post-report geotechnical services may include additional field and laboratory services.

8 LIMITATIONS

In preparing the findings and professional opinions presented in this report, Geo-Logic Associates (GLA) has endeavored to follow generally accepted principles and practices of the engineering geologic and geotechnical engineering professions in the area and at the time our services were performed. No warranty, either express or implied, is provided.

The conclusions and recommendations contained in this report are based, in part, on information that has been provided to us. In the event that the general development concept or general location and type of structures are modified, our conclusions and recommendations shall not be considered valid unless we are retained to review such changes and to make any necessary additions or changes to our recommendations. To remain as the project Geotechnical Engineer-of-record, GLA must be retained to provide geotechnical services as discussed under the Post-report Geotechnical Services section of this report.

Subsurface exploration is necessarily confined to selected locations and conditions may, and often do, vary between these locations. Should conditions different from those described in this report be encountered during project development, GLA should be consulted to review the conditions and determine whether our recommendations are still valid. Additional exploration, testing, and analysis may be required for such evaluation.

Should persons concerned with this project observe geotechnical features or conditions at the site or surrounding areas which are different from those described in this report, those observations should be reported immediately to GLA for evaluation.

It is important that the information in this report be made known to the design professionals involved with the project, that our recommendations be incorporated into project drawings and documents, and that the recommendations be carried out during construction by the contractor and subcontractors. It is not the responsibility of GLA to notify the design professionals and the project contractors and subcontractors.

The findings, conclusions, and recommendations in this report are applicable only to the specific project development on this specific site. These data should not be used for other projects, sites, or purposes unless they are reviewed by GLA or a qualified geotechnical professional.

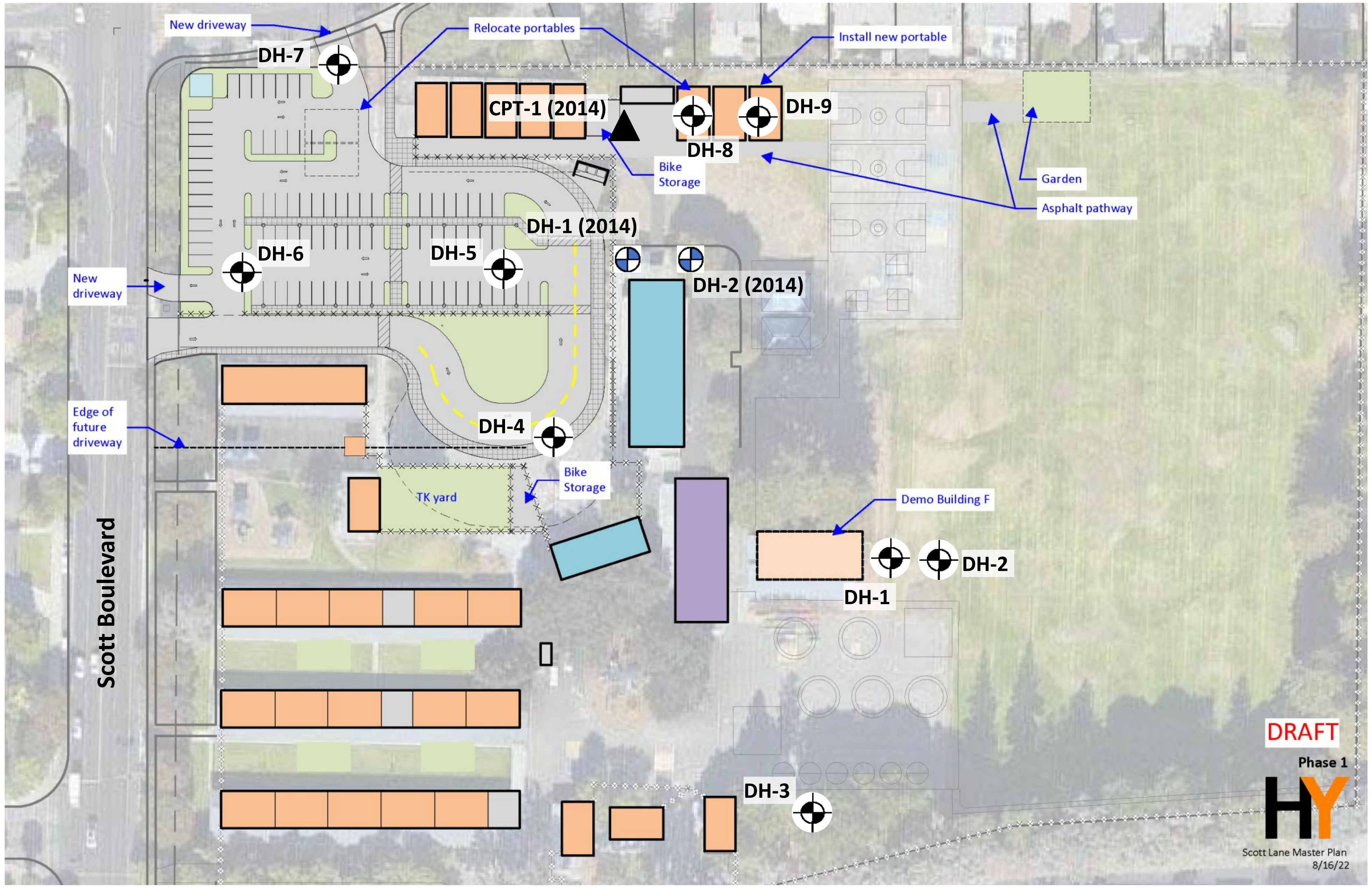
Report prepared by,

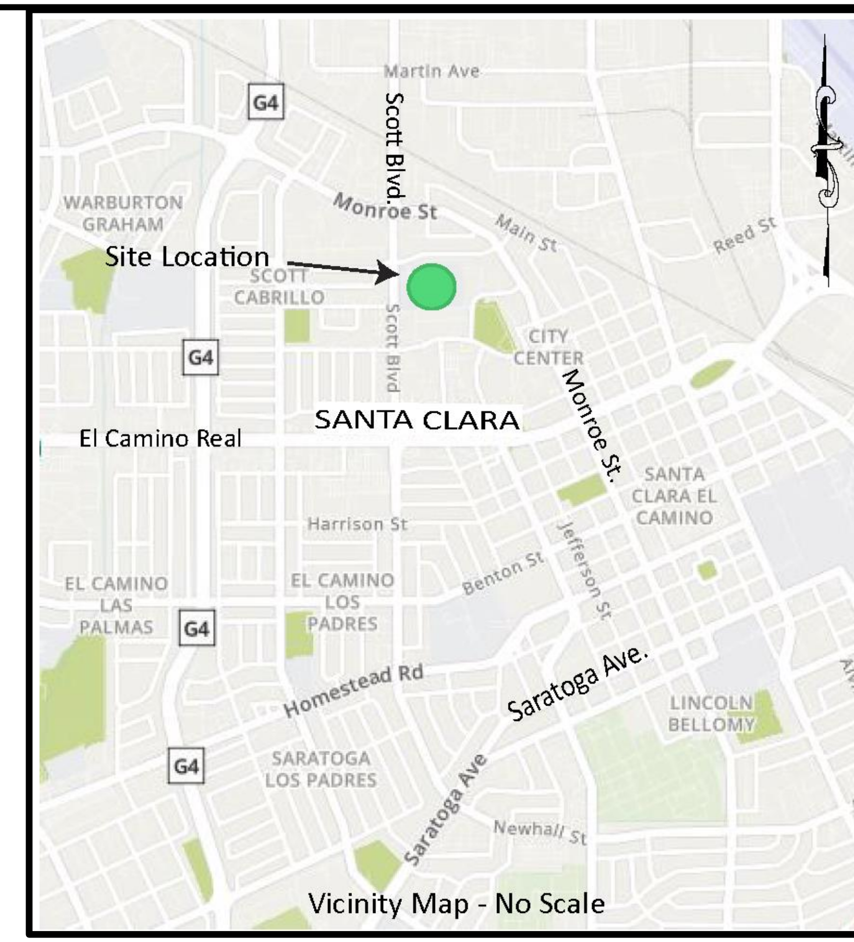
Geo-Logic Associates

Chalerm (Beeson) Liang
GE 2031

Copy: Santa Clara Unified School District, Melissa Kersh (1 electronic copy)

FIGURES





Legend

⊕	**DH-9**	Exploratory drill hole (this study)
⊕	**(DH-2, 2014)**	Exploratory drill hole (GLA, 2014, DH-1 and DH-2)
▲	**(CPT-1, 2014)**	Cone penetration test (GLA, 2014, CPT-1)

Approximate Scale (feet)

0 100 200 300

Base: Draft Phase 1 Scott Lane Mater Plan drawing provided by Santa Clara Unified School District, dated 8/16/22.

Geo-Logic
ASSOCIATES

6300 San Ignacio Avenue,
Suite A
San Jose, California 95119
Phone (408) 778-2818

Drafted By:

Date: September 2022

Checked By:

Revision:

SITE PLAN
Scott Lane Elementary School
1925 Scott Boulevard
Santa Clara, California

FIGURE
1

PROJECT
PA22.1033

APPENDIX A

SUBSURFACE INVESTIGATIONS

- **KEYS TO SOIL CLASSIFICATION (FINE AND COARSE GRAINED SOILS)**
- **LOG OF DRILL HOLES DH-1 THROUGH DH-9 (THIS STUDY)**
- **LOG OF DRILL HOLES DH-1 AND DH-2 (2014 STUDY)**
- **LOG OF CPT-1 (2014 STUDY)**

KEY TO SOIL CLASSIFICATION - FINE GRAINED SOILS

(50% OR MORE IS SMALLER THAN NO. 200 SIEVE SIZE)

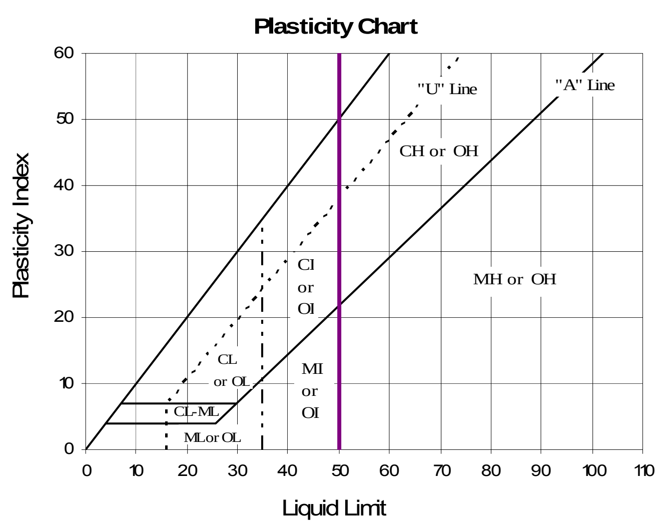
(modified from ASTM D2487 to include fine grained soils with intermediate plasticity)

MAJOR DIVISIONS			GROUP SYMBOLS	GROUP NAMES
SILTS AND CLAYS (Liquid Limit less than 35) Low Plasticity	Inorganic	PI < 4 or plots below "A" line	ML	Silt, Silt with Sand or Gravel, Sandy or Gravelly Silt, Sandy or Gravelly Silt with Sand or Gravel
	Inorganic	PI > 7 or plots on or above "A" line	CL	Lean Clay, Lean Clay with Sand or Gravel, Sandy or Gravelly Lean Clay, Sandy or Gravelly Lean Clay with Sand or Gravel
	Inorganic	PI between 4 and 7	CL-ML	Silty Clay, Silty Clay with Sand or Gravel, Sandy or Gravelly Silty Clay, Sandy or Gravelly Silty Clay with Sand or Gravel
	Organic	See footnote 3	OL	Organic Silt (below "A" Line) or Organic Clay (on or above "A" Line) (1,2)
SILTS AND CLAYS (35 ≤ Liquid Limit < 50) Intermediate Plasticity	Inorganic	PI < 4 or plots below "A" line	MI	Silt, Silt with Sand or Gravel, Sandy or Gravelly Silt, Sandy or Gravelly Silt with Sand or Gravel
	Inorganic	PI > 7 or plots on or above "A" line	CI	Clay, Clay with Sand or Gravel, Sandy or Gravelly Clay, Sandy or Gravelly Clay with Sand or Gravel
	Organic	See footnote 3	OI	Organic Silt (below "A" Line) or Organic Clay (on or above "A" Line) (1,2)
SILTS AND CLAYS (Liquid Limit 50 or greater) High Plasticity	Inorganic	PI plots below "A" line	MH	Elastic Silt, Elastic Silt with Sand or Gravel, Sandy or Gravelly Elastic Silt, Sandy or Gravelly Elastic Silt with Sand or Gravel
	Inorganic	PI plots on or above "A" line	CH	Fat Clay, Fat Clay with Sand or Gravel, Sandy or Gravelly Fat Clay, Sandy or Gravelly Fat Clay with Sand or Gravel
	Organic	See note 3 below	OH	Organic Silt (below "A" Line) or Organic Clay (on or above "A" Line) (1,2)

1. If soil contains 15% to 29% plus No. 200 material, include "with sand" or "with gravel" to group name, whichever is predominant.
2. If soil contains ≥30% plus No. 200 material, include "sandy" or "gravelly" to group name, whichever is predominant. If soil contains ≥15% of sand or gravel sized material, add "with sand" or "with gravel" to group name.
3. Ratio of liquid limit of oven dried sample to liquid limit of not dried sample is less than 0.75.

CONSISTENCY	UNCONFINED SHEAR STRENGTH (KSF)	STANDARD PENETRATION (BLOWS/FOOT)
VERY SOFT	< 0.25	< 2
SOFT	0.25 – 0.5	2 – 4
FIRM	0.5 – 1.0	5 – 8
STIFF	1.0 – 2.0	9 – 15
VERY STIFF	2.0 – 4.0	16 – 30
HARD	> 4.0	> 30

MOISTURE	CRITERIA
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp, but no visible water
Wet	Visible free water, usually soil is below the water table



GEO-LOGIC ASSOCIATES

KEY TO SOIL CLASSIFICATION – COARSE GRAINED SOILS

(MORE THAN 50% IS LARGER THAN NO. 200 SIEVE SIZE)

(modified from ASTM D2487 to include fines with intermediate plasticity)

MAJOR DIVISIONS			GROUP SYMBOLS	GROUP NAMES[1]
GRAVELS (more than 50% of coarse fraction is larger than No. 4 sieve size)	Gravels with less than 5% fines	Cu ≥ 4 and 1 ≤ Cc ≤ 3	GW	Well Graded Gravel, Well Graded Gravel with Sand
		Cu < 4 and/or 1 > Cc > 3	GP	Poorly Graded Gravel, Poorly Graded Gravel with Sand
	Gravels with 5% to 12% fines	ML, MI or MH fines	GW-GM	Well Graded Gravel with Silt, Well Graded Gravel with Silt and Sand
			GP-GM	Poorly Graded Gravel with Silt, Poorly Graded Gravel with Silt and Sand
		CL, CI or CH fines	GW-GC	Well Graded Gravel with Clay, Well Graded Gravel with Clay and Sand
			GP-GC	Poorly Graded Gravel with Clay, Poorly Graded Gravel with Clay and Sand
	Gravels with more than 12% fines	ML, MI or MH fines	GM	Silty Gravel, Silty Gravel with Sand
		CL, CI or CH fines	GC	Clayey Gravel, Clayey Gravel with Sand
		CL-ML fines	GC-GM	Silty Clayey Gravel; Silty, Clayey Gravel with Sand
SANDS (50% or more of coarse fraction is smaller than No. 4 sieve size)	Sands with less than 5% fines	Cu ≥ 6 and 1 ≤ Cc ≤ 3	SW	Well Graded Sand, Well Graded Sand with Gravel
		Cu < 6 and/or 1 > Cc > 3	SP	Poorly Graded Sand, Poorly Graded Sand with Gravel
	Sands with 5% to 12% fines	ML, MI or MH fines	SW-SM	Well Graded Sand with Silt, Well Graded Sand with Silt and Gravel
			SP-SM	Poorly Graded Sand with Silt, Poorly Graded Sand with Silt and Gravel
		CL, CI or CH fines	SW-SC	Well Graded Sand with Clay, Well Graded Sand with Clay and Gravel
			SP-SC	Poorly Graded Sand with Clay, Poorly Graded Sand with Clay and Gravel
	Sands with more than 12% fines	ML, MI or MH fines	SM	Silty Sand, Silty Sand with Gravel
		CL, CI or CH fines	SC	Clayey Sand, Clayey Sand with Gravel
		CL-ML fines	SC-SM	Silty, Clayey Sand; Silty, Clayey Sand with Gravel

US STANDARD SIEVES 3 Inch ¾ Inch No. 4 No. 10 No. 40 No. 200

	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES & BOULDERS	GRAVELS		SANDS			SILTS AND CLAYS

RELATIVE DENSITY (SANDS AND GRAVELS)	STANDARD PENETRATION (BLOWS/FOOT)
Very Loose	0 - 4
Loose	5 – 10
Medium Dense	11 – 30
Dense	31 - 50
Very Dense	50+

1. Add "with sand" to group name if material contains 15% or greater of sand-sized particle. Add "with gravel" to group name if material contains 15% or greater of gravel-sized particle.

MOISTURE	CRITERIA
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp, but no visible water
Wet	Visible free water, usually soi is below the water table

GEO-LOGIC ASSOCIATES

DATE: 8/9/2022	**LOG OF EXPLORATORY DRILL HOLE**	**DH- 1**

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), dry, very stiff to hard	CL											
		1	S									
		2	D	15								
			D					11		85		
		3										
			S									
brown (10YR 5/3), moist		4	D	15	2.5							
			D		4.25			21		101		
		5										
		6										
		7										
		8										
			S									
dark brown (10YR 3/3), stiff to very stiff		9	D	7	2.75							
			D		1.5							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	**LOG OF EXPLORATORY DRILL HOLE**		**DH- 2**
PROJECT NAME: Scott Lane Elementary School		**PROJECT NUMBER:**	PA22.1033
DRILL RIG: Mobile B-53R		**LOGGED BY:**	FS
HOLE DIAMETER: 8-inch hollow stem auger		**HOLE ELEVATION:**	---
SAMPLER: D = 3" OD, 2½" ID Split-spoon X = 2½" OD, 2" ID Split-spoon I = Standard Penetrometer (2" OD SPT) S = Slough in sample	**GROUND WATER DEPTH:**	**Initial:** **Final:**	--- ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), moist, very stiff to hard	CL											
		1	S									
		2	D D	17	4.5 4.5		35	10	15	105		
		3										
pale brown (10YR 6/3)		4	S D D	15	4.5 4.5							
		5										
		6										
		7										
		8										
dark yellowish brown (10YR 4/3), stiff		9	S D D	9	1.0			19		81		
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	**LOG OF EXPLORATORY DRILL HOLE**	**DH- 3**

PROJECT NAME:	Scott Lane Elementary School	**PROJECT NUMBER:**	PA22.1033
DRILL RIG:	Mobile B-53R, auto hammer	**LOGGED BY:**	FS
HOLE DIAMETER:	8-inch hollow stem auger	**HOLE ELEVATION:**	---
SAMPLER:	D = 3" OD, 2½" ID Split-spoon X = 2½" OD, 2" ID Split-spoon I = Standard Penetrometer (2" OD SPT) S = Slough in sample	**GROUND WATER DEPTH:**	**Initial:** 20 ft **Final:** 37.2 ft

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Dark gray (10YR 4/1), dry, very stiff	CL											
		1	S									
		2	D D	24	4.0 4.0	25		10		100		
		3	S									
brown (10YR 5/3), moist		4	D D	24	3.0 4.5+							
		5										
		6										
		7										
		8	S									
		9	D	10	4.5+							
FAT CLAY: Black (10YR 2/1), moist, very stiff to hard	CH	10	D		4.5+							
		11										
		12										
		13	S									
firm to stiff		14	D D	10	0.75 0.25			36		86		
		15										
		16										
		17										
		18	S									
yellowish brown (10YR 5/4), wet		19	D D	13	0.25 1.25			26		101		
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 3

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R, auto hammer **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** 20 ft **Final:** 37.2 ft

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
FAT CLAY (continued)	CH											
		21										
		22										
		23										
		24	S D D	14	0.5 0.5		50	28	34	98		
		25										
		26										
CLAYEY SAND: Dark grayish brown (10YR4/2), wet, medium dense to dense; mostly fine to medium sand	SC	27										
		28										
		29	S D D	33		23		21		106		
		30										
		31										
POORLY GRADED SAND: Dark grayish brown (10yr 4/2), wet, dense to very dense; mostly fine to medium sand	SP	32										
		33										
		34	S D D	65		5		19		111		
		35										
		36										
		37										
		38										
		39	S D D	6	0.25							
CLAY: Dark greenish gray (5G 4/1), moist, firm	CI	40										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 3

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R, auto hammer **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** 20 ft **Final:** 37.2 ft

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
CLAY (continued)	CI											
		41										
		42										
		43										
firm to stiff		44	S D D	15	1.25 0.25		37	23	18	102		
		45										
		46										
		47										
		48										
firm		49	S D D	17	0.5 0.5			26		101		
		50										
BOTTOM OF HOLE = 50 Feet												
		51										
		52										
		53										
		54										
		55										
		56										
		57										
		58										
		59										
		60										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 4

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±4" AC over ±7" AB)												
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), moist, very stiff to hard	CL	1										
		2	S D D	23	4.5			11		114		
		3										
pale brown (10YR 6/3)		4	S D D	20	4.5			13		106		
		5										
		6										
		7										
		8										
dark yellowish bown (10YR 3/4), firm to stiff		9	S D D	8	1.25 0.5							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 5
PROJECT NAME: Scott Lane Elementary School	PROJECT NUMBER: PA22.1033	
DRILL RIG: Mobile B-53R	LOGGED BY: FS	
HOLE DIAMETER: 8-inch hollow stem auger	HOLE ELEVATION: ---	
SAMPLER: D = 3" OD, 2½" ID Split-spoon; X = 2½" OD, 2" ID Split-spoon; I = Standard Penetrometer (2" OD SPT); S = Slough in sample	GROUND WATER DEPTH: Initial: --- Final: ---	

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±4" AC over ±7" AB)												
ALLUVIUM, LEAN CLAY: Dark grayish brown (10YR 4/2), moist, stiff to very stiff	CL	1	S									
		2	D D	15	4.5 3.0							
		3										
		4	S D	20	3.0							
		5	D		1.25			24		103		
		6										
		7										
		8										
very dark grayish brown (10YR 3/2), soft		9	S D	4	0.25							
		10	D		0.25							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 6

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R, auto hammer **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±4" AC over ±7" AB)												
ALLUVIUM, LEAN CLAY: Very dark grayish brown (10YR 5/4), moist, stiff to very stiff	CL	1										
		2	S D D	20	3.25			8		108		
		3										
yellowish brown (10YR 5/4)		4–5	S D D	16	4.25 / 4.0			20		108		
		6										
		7										
		8										
dark yellowish brown (10YR 4/6), firm to stiff		9–10	S D D	9	0.5 / 2.0							
FAT CLAY: Very dark grayish brown (10YR 3/2), moist, stiff	CH	11										
		12										
		13										
		14–15	S D D	12	1.0 / 1.0							
		16										
		17										
		18										
wet		19–20	S D D	9	1.25 / 1.25							
BOTTOM OF HOLE = 20 feet No groundwater encountered												

GEO-LOGIC ASSOCIATES

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 7

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: Initial: --- Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Very dark grayish brown (10YR 3/2), moist, stiff to very stiff	CL											
		1	S									
		2	D D	13	1.75 2.5			37		68		
		3										
		4	S									
dark grayish brown (10YR 4/6), firm to stiff		5	D D	10	0.5 0.75			28		94		
		6										
		7										
		8										
		9	S									
black (10YR 2/1), stiff		10	D D	13	1.0 1.0							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

GEO-LOGIC ASSOCIATES

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 8

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), dry to moist, very stiff to hard	CL											
		1	S									
		2	D D	27	4..5+ 4..5+			14		99		
		3										
light brown gray (10YR 6/2)		4	S D	25	4..5+							
		5	D		4..5+			21		94		
		6										
		7										
		8										
dark grayish brown (10YR 4/2), firm		9	S D D	11	0.75 0.25							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022

LOG OF EXPLORATORY DRILL HOLE

DH- 9

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), dry to moist, very stiff to hard	CL											
		1	S									
		2	D D	21	4..5+ 4..5+			13		88		
		3										
yellowish brown (10YR 5/4), moist, stiff to very stiff		4	S D D	22	2.0 4.5							
		5										
		6										
		7										
		8										
very dark grayish brown (10YR 3/2), soft to firm		9	S D D	7	0.25 0.25			36		84		
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 4/19/2014	**LOG OF EXPLORATORY DRILL HOLE**	**DH- 1**

PROJECT NAME: Scott Lane Elementary School Portable **PROJECT NUMBER:** 2014.0069

DRILL RIG: Mobile B53 140# hammer w rods & wire winch **LOGGED BY:** BT

HOLE DIAMETER: 8" Hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** 11 ft **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM: CLAY: Grayish brown (2.5Y 5/2), dry to moist, hard; minor rootlets	CI	1										
		2	SDD	22	4.5+			10		114		
SANDY LEAN CLAY with GRAVEL: Olive brown (2.5Y 4/4), moist, hard; with fine to coarse sand and gravel	CL	3										
		4	SDD	12	4.5	61		20		102		
CLAYEY SAND to SANDY LEAN CLAY: olive brown (2.5Y 4/4), moist, medium dense sand to stiff clay	SC/CL	5										
		6	SDD	10	2.0							
		7										
CLAY: Olive brown (2.5Y 4/4), moist, firm	CI	8										
		9	SDD	9	1.0			33		86		
		10										
		11										
		12										
		13										
		14										
dark gray (2.5Y 4/1), stiff		15	SDD	14	2.25							
		16										
		17										
		18										
		19										
		20	SDD	34								
BOTTOM OF HOLE = 20 Feet												

DATE: 4/19/2014

LOG OF EXPLORATORY DRILL HOLE

DH- 2

PROJECT NAME: Scott Lane Elementary School Portable | **PROJECT NUMBER:** 2014.0069

DRILL RIG: Mobile B53 140# hammer w rods & wire winch | **LOGGED BY:** BT

HOLE DIAMETER: 8" Hollow stem auger | **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** NA **Final:** NA

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM: CLAY: Very dark gray (2.5Y 3/1) moist, hard; minor rootlets	CH											
		1	S D									
		2	D	18	4.5+			12		105		
SANDY LEAN CLAY: Olive brown (2.5Y 4/4) moist, hard; with fine to coarse sand	CL	3	S D D	17	4.5+		25		9			
		4										
CLAYEY SAND to SANDY LEAN CLAY: olive brown (2.5Y 4/4), moist, medium dense sand to stiff clay	SC/ CL	5	S D									
		6	D	11		49		19		101		
		7										
		8	S									
CLAY: Dark olive brown (2.5Y 3/3) moist, firm; with minor rootlets	CI	9	D D	8	<1							
		10										
		11										
		12										
		13										
		14	S									
very dark gray (2.5Y 3/1), firm to stiff		15	D D	11	1.5							
BOTTOM OF HOLE = 15.5 Feet No groundwater encountered		16										
		17										
		18										
		19										
		20										

PROJECT: SCOTT CREEK ELEMENTARY SCHOOL
LOCATION: Santa Clara CA
PROJ. NO.: 2014.0069(PGE-29)
Terminated at 45.0 feet

CPT NO.: CPT-1
DATE: 04-19-2014
TIME: 13:53:00
Groundwater measureddd at 6.0 feet

PACIFIC GEOTECHNICAL
cpts by John Sarmiento & Associates

DEPTH (feet)	Qc (tsf)	Qc' (tsf)	Fs (tsf)	Rf (%)	SPT (N)	SPT' (N')	EffVtStr (ksf)	PHI (deg.)	SU (ksf)	SOIL BEHAVIOR TYPE	DENSITY RANGE (pcf)
0.53	41.6	66.59	0.83	2.0	17	27	0.06	----	5.55	Sandy SILT to Clayey SILT	130-140
1.06	48.5	77.6	1.61	3.3	24	39	0.13	----	6.46	Clayey SILT to Silty CLAY	"
1.52	52.4	83.82	0.97	1.9	17	28	0.20	37	----	Silty SAND to Sandy SILT	"
2.05	31.2	49.98	0.71	2.3	12	20	0.26	----	4.15	Sandy SILT to Clayey SILT	120-130
2.56	59.7	95.55	1.33	2.2	24	38	0.33	----	7.94	"	130-140
3.01	86.9	139.02	1.38	1.6	29	46	0.39	40	----	Silty SAND to Sandy SILT	"
3.53	77.1	123.39	1.06	1.4	26	41	0.46	39	----	"	120-130
4.05	66.7	106.72	1.20	1.8	22	36	0.53	38	----	"	130-140
4.50	26.9	43.02	1.52	5.6	27	43	0.59	----	3.55	CLAY	"
5.02	21.1	33.76	1.29	6.1	21	34	0.66	----	2.77	"	"
5.50	19.4	31.10	1.09	5.6	19	31	0.72	----	2.54	"	"
6.03	16.1	25.76	0.97	6.0	16	26	0.76	----	2.09	"	120-130
6.56	18.1	29.01	0.55	3.0	9	15	0.79	----	2.36	Clayey SILT to Silty CLAY	"
7.01	9.0	14.23	0.52	5.8	9	14	0.81	----	1.70	CLAY	110-120
7.55	6.6	10.32	0.33	5.0	7	10	0.84	----	1.23	"	"
8.01	6.6	10.09	0.37	5.7	7	10	0.86	----	1.21	"	"
8.53	17.5	26.44	0.24	1.4	7	11	0.89	----	2.27	Sandy SILT to Clayey SILT	"
9.06	5.8	8.60	0.29	5.0	6	9	0.91	----	1.04	CLAY	100-110
9.52	4.7	6.93	0.22	4.6	5	7	0.93	----	0.83	"	"
10.07	5.9	8.51	0.36	6.1	6	9	0.96	----	1.06	"	"
10.54	6.1	8.68	0.31	5.2	6	9	0.98	----	1.09	"	"
11.00	8.0	11.25	0.43	5.3	8	11	1.00	----	1.47	"	110-120
11.56	9.7	13.37	0.49	5.0	9	13	1.03	----	1.49	"	"
12.02	9.8	13.47	0.60	6.1	10	14	1.06	----	1.52	"	120-130
12.57	10.0	13.45	0.58	5.8	10	14	1.09	----	1.53	"	"
13.04	11.0	14.64	0.66	6.0	11	15	1.12	----	1.69	"	"
13.58	10.7	14.14	0.66	6.2	11	14	1.16	----	1.65	"	"
14.04	10.2	13.22	0.56	5.5	10	13	1.19	----	1.55	"	"
14.57	11.1	14.26	0.61	5.5	11	14	1.22	----	1.70	"	"
15.03	10.9	13.88	0.54	4.9	11	14	1.25	----	1.67	"	"
15.56	8.2	10.35	0.49	6.0	8	10	1.28	----	1.46	"	110-120
16.03	9.8	12.22	0.41	4.2	9	12	1.30	----	1.47	"	"
16.57	10.5	12.87	0.46	4.4	10	12	1.33	----	1.57	"	"
17.03	12.0	14.63	0.52	4.3	12	14	1.36	----	1.46	"	120-130
17.57	15.9	19.08	0.63	4.0	10	12	1.39	----	1.97	Silty CLAY to CLAY	"
18.03	15.5	18.35	0.59	3.8	10	12	1.42	----	1.91	"	"
18.50	17.8	20.86	0.74	4.2	12	14	1.45	----	2.22	"	"
19.00	22.1	25.54	1.15	5.2	22	25	1.49	----	2.79	CLAY	130-140
19.50	20.3	23.12	1.03	5.1	20	23	1.52	----	2.54	"	"
20.07	20.4	22.95	0.98	4.8	20	23	1.56	----	2.55	"	"
20.58	14.6	16.26	0.70	4.8	14	16	1.60	----	1.77	"	120-130
21.08	11.3	12.53	0.29	2.6	5	6	1.62	----	1.67	Clayey SILT to Silty CLAY	110-120
21.53	15.4	16.92	0.45	2.9	7	8	1.65	----	1.88	"	120-130
22.02	18.0	19.54	0.79	4.4	17	19	1.68	----	2.22	CLAY	"
22.53	23.6	25.25	0.92	3.9	15	17	1.72	----	2.96	Silty CLAY to CLAY	130-140
23.03	51.6	54.64	0.53	1.0	17	18	1.75	35	----	Silty SAND to Sandy SILT	120-130
23.54	45.6	47.96	0.70	1.5	15	16	1.78	34	----	"	"
24.04	21.9	22.90	0.99	4.5	22	23	1.82	----	2.73	CLAY	130-140
24.55	28.3	29.30	0.76	2.7	14	15	1.86	----	3.57	Clayey SILT to Silty CLAY	"
25.03	9.5	9.78	0.44	4.6	9	10	1.88	----	1.33	CLAY	110-120
25.55	8.1	8.28	0.29	3.5	8	8	1.90	----	1.30	"	100-110
26.06	8.9	9.08	0.26	2.9	6	6	1.92	----	1.46	Silty CLAY to CLAY	"
26.57	9.2	9.34	0.30	3.3	6	6	1.95	----	1.27	"	110-120
27.08	8.7	8.72	0.29	3.3	6	6	1.98	----	1.40	"	"

PROJECT: SCOTT CREEK ELEMENTARY SCHOOL
LOCATION: Santa Clara CA
PROJ. NO.: 2014.0069(PGE-29)
Terminated at 45.0 feet

CPT NO.: CPT-1
DATE: 04-19-2014
TIME: 13:53:00
Groundwater measureddd at 6.0 feet

PACIFIC GEOTECHNICAL
cpts by John Sarmiento & Associates

DEPTH (feet)	Qc (tsf)	Qc' (tsf)	Fs (tsf)	Rf (%)	SPT (N)	SPT' (N')	EffVtStr (ksf)	PHI (deg.)	SU (ksf)	SOIL BEHAVIOR TYPE	DENSITY RANGE (pcf)
27.50	9.6	9.61	0.38	4.0	10	10	2.00	----	1.32	CLAY	110-120
28.07	71.4	71.37	1.96	2.7	29	29	2.04	----	9.29	Sandy SILT to Clayey SILT	130-140
28.57	26.2	26.18	0.96	3.7	13	13	2.08	----	3.26	Clayey SILT to Silty CLAY	"
29.08	49.3	49.23	0.69	1.4	17	17	2.11	34	----	Silty SAND to Sandy SILT	120-130
29.50	30.4	30.33	0.61	2.0	12	12	2.14	----	3.81	Sandy SILT to Clayey SILT	"
30.01	22.1	22.03	0.51	2.3	9	9	2.17	----	2.70	"	"
30.51	16.6	16.49	0.29	1.8	7	7	2.19	----	1.96	"	110-120
31.02	14.1	14.04	0.68	4.8	14	14	2.23	----	1.63	CLAY	120-130
31.57	43.7	43.47	0.64	1.5	15	15	2.26	33	----	Silty SAND to Sandy SILT	"
32.08	38.5	38.27	0.56	1.5	13	13	2.29	32	----	"	"
32.50	11.2	11.11	0.49	4.4	11	11	2.32	----	1.53	CLAY	"
33.01	9.8	9.73	0.21	2.1	5	5	2.34	----	1.30	Clayey SILT to Silty CLAY	100-110
33.52	8.4	8.35	0.20	2.4	6	6	2.36	----	1.27	Silty CLAY to CLAY	"
34.02	8.2	8.16	0.14	1.7	4	4	2.38	----	1.23	Clayey SILT to Silty CLAY	"
34.52	8.4	8.36	0.12	1.4	4	4	2.40	----	1.26	"	90-100
35.03	11.0	10.89	0.19	1.8	6	6	2.42	----	1.47	"	100-110
35.54	13.5	13.38	0.31	2.3	7	7	2.45	----	1.51	"	110-120
36.05	10.9	10.83	0.26	2.4	6	6	2.48	----	1.46	"	"
36.56	11.0	10.90	0.33	3.0	7	7	2.50	----	1.47	Silty CLAY to CLAY	"
37.07	11.1	10.86	0.27	2.4	6	5	2.53	----	1.47	Clayey SILT to Silty CLAY	"
37.57	10.8	10.52	0.21	1.9	5	5	2.55	----	1.42	"	100-110
38.04	11.2	10.86	0.22	1.9	6	6	2.57	----	1.49	"	"
38.52	12.5	12.00	0.31	2.5	6	6	2.60	----	1.36	"	110-120
39.05	24.4	23.09	0.76	3.1	12	12	2.63	----	2.94	"	130-140
39.57	48.1	44.93	0.92	1.9	16	15	2.67	33	----	Silty SAND to Sandy SILT	"
40.03	68.4	63.21	0.77	1.1	17	16	2.70	35	----	SAND to Silty SAND	120-130
40.53	19.0	17.38	0.59	3.1	10	9	2.73	----	2.21	Clayey SILT to Silty CLAY	"
41.04	14.5	13.13	0.56	3.9	10	9	2.76	----	1.61	Silty CLAY to CLAY	"
41.54	11.8	10.58	0.32	2.7	6	5	2.79	----	1.55	Clayey SILT to Silty CLAY	110-120
42.05	11.2	9.94	0.30	2.7	6	5	2.82	----	1.45	"	"
42.56	12.0	10.52	0.33	2.7	6	5	2.84	----	1.26	"	"
43.07	11.4	9.91	0.28	2.4	6	5	2.87	----	1.47	"	"
43.59	11.7	10.02	0.27	2.3	6	5	2.90	----	1.51	"	"
44.08	12.0	10.24	0.33	2.8	6	5	2.92	----	1.25	"	"
44.58	11.4	9.59	0.24	2.1	6	5	2.95	----	1.45	"	100-110
45.08	18.5	15.41	0.31	1.7	7	6	2.97	----	2.10	Sandy SILT to Clayey SILT	110-120

DEPTH = Sampling interval (~0.1 feet)
Qc = Tip bearing uncorrected   Qt = Tip bearing corrected   Fs = Sleeve friction resistance   Rf = Qt / Fs
SPT = Equivalent Standard Penetration Test   Qt' and SPT' = Qt and SPT corrected for overburden
EffVtStr = Effective Vertical Stress using est. density**   Phi = Soil friction angle*
Su = Undrained Soil Strength* (see classification chart)
References: * Robertson and Campanella, 1988   **Olsen, 1989   *** Durgunoglu & Mitchell, 1975

APPENDIX B

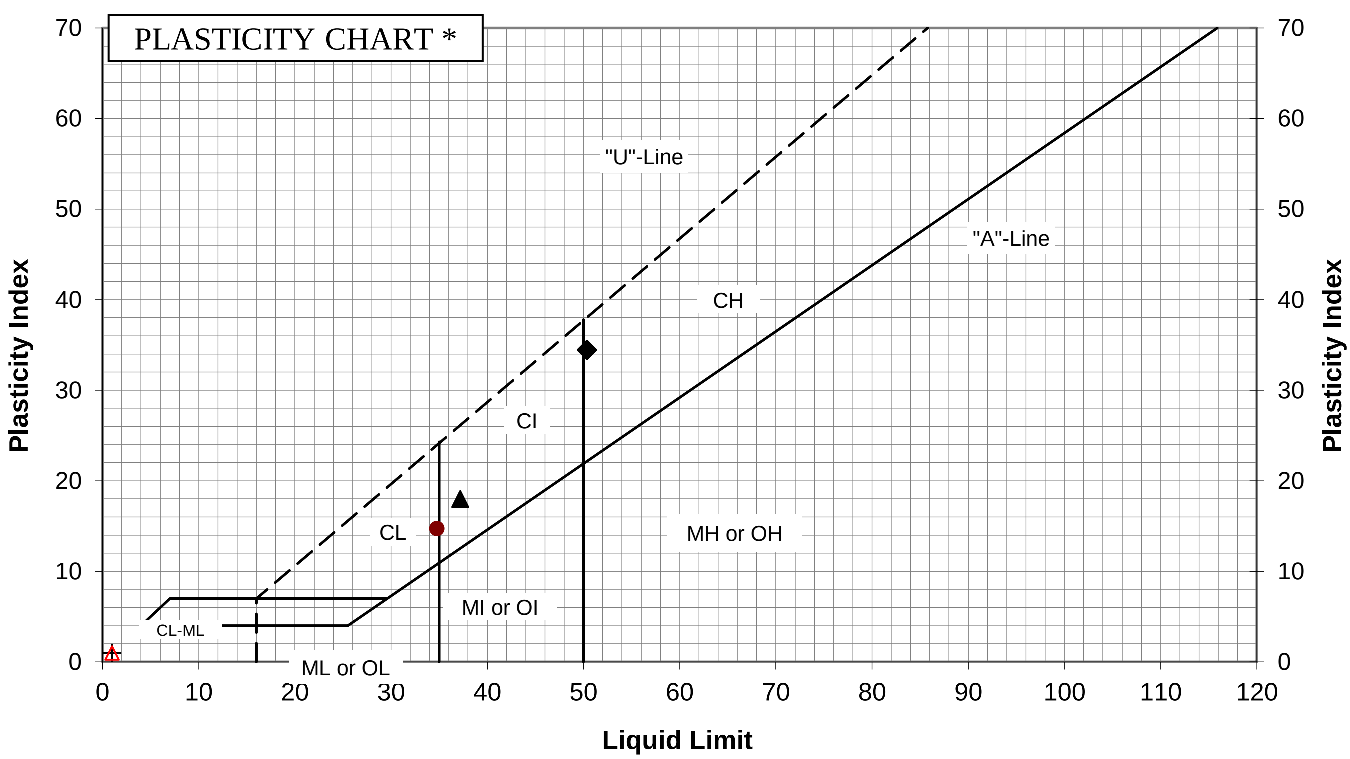
LABORATORY TEST DATA

- **LABORATORY TEST DATA FROM THIS STUDY**
- **LABORATORY TEST DATA FROM OUR 2014 INVESTIGATION**

ATTERBERG LIMITS TEST RESULTS

PROJECT NAME Scott Lane Elementary School | **PROJECT No.** PA22.1033

DATE OF TEST	8/17/2022	8/17/2022	8/17/2022		
KEY SYMBOL	●	♦	▲		
DRILL HOLE No.	2	3	3		
DEPTH (ft)	2-2.5	24.5-25	44-44.5		
NATURAL WATER CONTENT (%)	8	8	11		
% Retained No. 40 SIEVE (Est.)	--	--	--		
% PASSING No. 200 SIEVE	--	--	--		
LIQUID LIMIT	35	50	37		
PLASTIC LIMIT	20	16	19		
PLASTICITY INDEX	15	34	18		
CLASSIFICATION SYMBOL	CL	CH	CI		



* Based on the Unified Soil Classification System modified to incorporate the "intermediate" classifications CI, MI, and OI for soils with liquid limits between 35 and 50. In the unmodified Unified Soil Classification System, such soils would be classified as CL, ML and OL, respectively.

GEO-LOGIC ASSOCIATES | **Figure B-1**

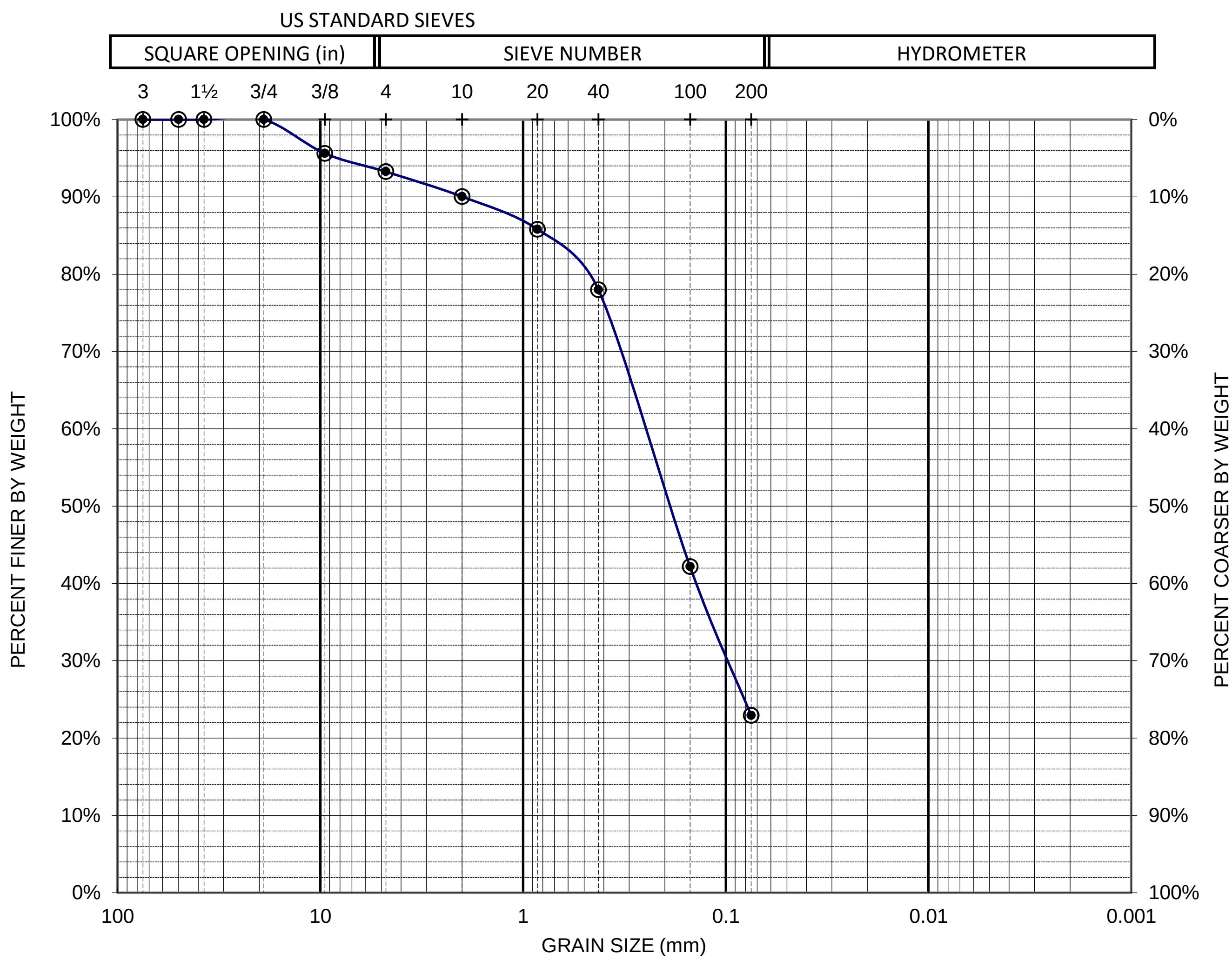
Rev030106

GRAIN SIZE TEST RESULTS

PROJECT NAME	Scott Lane Elementary School				**PROJECT No.**	PA22.1033.00
DRILL HOLE No.	3	**DEPTH (ft)** 29.5-30	**SAMPLE**	0	**DATE OF TEST**	8/17/2022

SOURCE/QUARRY: ---

DESCRIPTION OF SOIL: Clayey Sand, dark grayish brown (10YR 4/2).



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	6.7%		70.3%			22.9%

REMARKS:

GEO-LOGIC ASSOCIATES

Figure B-2

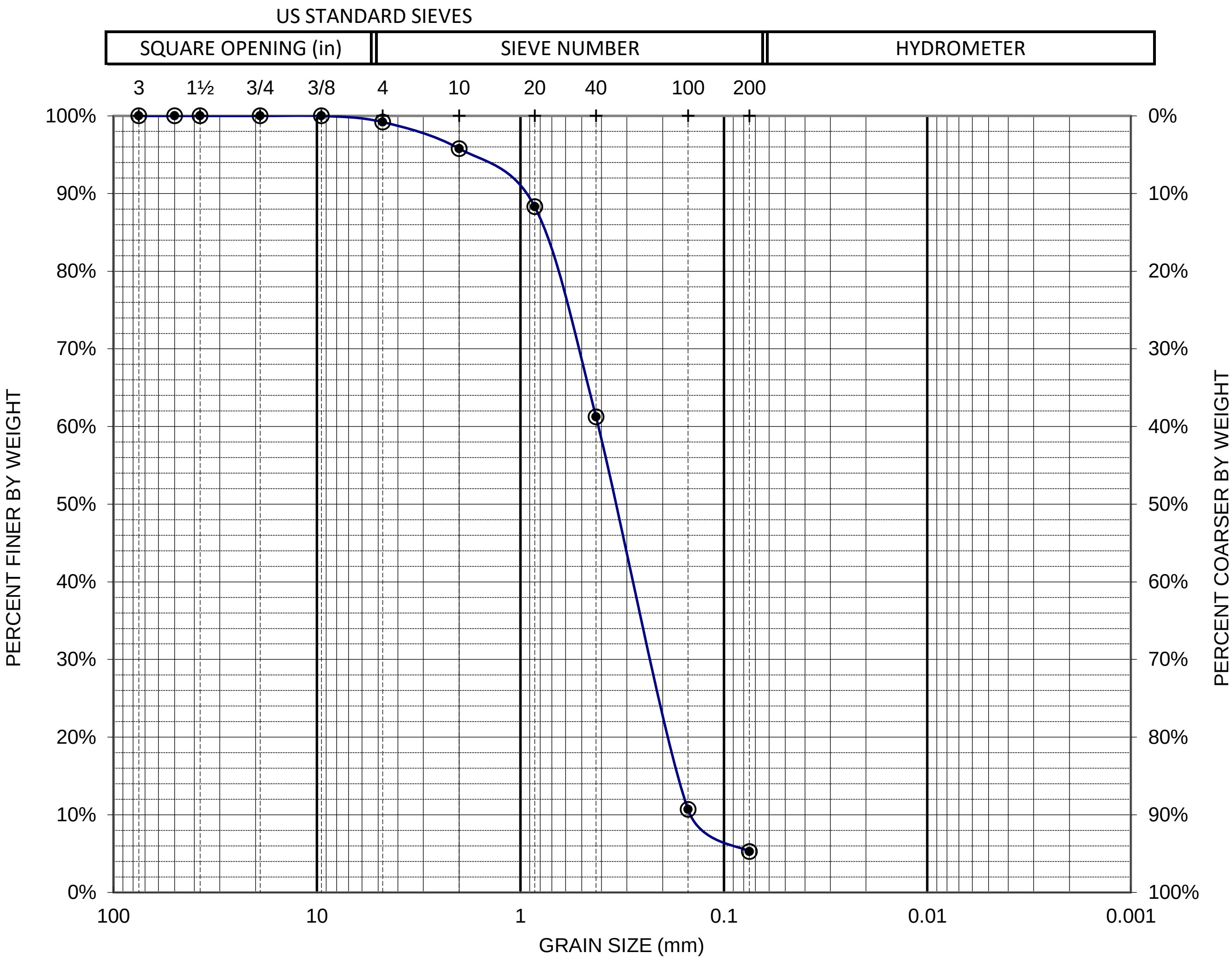
RevOct20070

GRAIN SIZE TEST RESULTS

PROJECT NAME	Scott Lane Elementary School					**PROJECT No.**	PA22.1033.00
DRILL HOLE No.	3	**DEPTH (ft)**	34.5-35	**SAMPLE**	0	**DATE OF TEST**	8/17/2022

SOURCE/QUARRY: ---

DESCRIPTION OF SOIL: Poorly graded sand, dark grayish brown (10YR 4/2)



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	0.8%		93.9%			5.3%

REMARKS:

GEO-LOGIC ASSOCIATES | **Figure B-3**

RevOct20070

'R' VALUE CA 301

Project	Scott Lane Elem. School	Date: 8/17/22	By: LD
Job #:	PA22.1033	Sample : #1	
		Soil Type: Brown, Clayey Sand w. F. Gravel	

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**150**	**300**	**200**	
Initial Moisture Content	%	**10.6**	**10.6**	**10.6**	
Water Added	ml	**15**	**5**	**10**	
Moisture at Compaction	%	12.0	11.1	11.5	
Sample & Mold Weight	gms	**3233**	**3248**	**3238**	
Mold Weight	gms	**2095**	**2110**	**2099**	
Net Sample Weight	gms	1138	1138	1139	
Sample Height	in.	**2.5**	**2.451**	**2.472**	
Dry Density	pcf	123.2	126.7	125.2	
Pressure	lbs	**3485**	**7365**	**4960**	
Exudation Pressure	psi	277	586	395	
Expansion Dial	x 0.0001	**25**	**62**	**44**	
Expansion Pressure	psf	108	268	191	
Ph at 1000lbs	psi	**32**	**25**	**28**	
Ph at 2000lbs	psi	**72**	**55**	**62**	
Displacement	turns	**4.11**	**3.75**	**4.03**	
R' Value		43	56	50	
Corrected 'R' Value		**43**	**56**	**50**	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**45**
By Epansion Pressure :	**41**
TI = 5	

FIGURE B-4

Geo-Logic ASSOCIATES

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

24 August, 2022

Job No. 2208022
Cust. No. 10854

Ms. Francesca Senes
Geo-Logic Associates
6300 San Ignacio Ave., Suite A
San Jose, CA 95119

Subject: Project No.: PA22.1033.00
Project Name: 1925 Scott Blvd., Santa Clara, CA
Corrosivity Analysis – ASTM Test Methods

Dear Ms. Senes:

Pursuant to your request, CERCO Analytical has analyzed the soil sample submitted on August 12, 2022. Based on the analytical results, this brief corrosivity evaluation is enclosed for your consideration.

Based upon the resistivity measurement, this sample is classified as "corrosive". All buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron should be properly protected against corrosion depending upon the critical nature of the structure. All buried metallic pressure piping such as ductile iron firewater pipelines should be protected against corrosion.

The chloride ion concentration is 47 mg/kg and is determined to be insufficient to attack steel embedded in a concrete mortar coating.

The sulfate ion concentration is 56 mg/kg and is determined to be insufficient to damage reinforced concrete structures and cement mortar-coated steel at this location.

The pH of the soil is 8.24, which does not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.

The redox potential is 300-mV and is indicative of potentially "slightly corrosive" soils resulting from anaerobic soil conditions.

This corrosivity evaluation is based on general corrosion engineering standards and is non-specific in nature. For specific long-term corrosion control design recommendations or consultation, please call *JDH Corrosion Consultants, Inc. at (925) 927-6630.*

We appreciate the opportunity of working with you on this project. If you have any questions, or if you require further information, please do not hesitate to contact us.

Very truly yours,
CERCO ANALYTICAL, INC.

Sherri Moore

for, J. Darby Howard, Jr., P.E.
President

JDH/jdl
Enclosure

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Client: Geo-Logic Associates
Client's Project No.: PA22.1033.00
Client's Project Name: 1925 Scott Boulevard, Santa Clara, CA
Date Sampled: 8-Aug-22
Date Received: 12-Aug-22
Matrix: Soil
Authorization: Signed Chain of Custody

Date of Report: 24-Aug-2022

Job/Sample No.	Sample I.D.	Redox (mV)	pH	Conductivity (umhos/cm)*	Resistivity (100% Saturation) (ohms-cm)	Sulfide (mg/kg)*	Chloride (mg/kg)*	Sulfate (mg/kg)*
2208022-001	Scott Ln. ES	300	8.24	-	1,800	-	47	56

Method:	ASTM D1498	ASTM D4972	ASTM D1125M	ASTM G57	ASTM D4658M	ASTM D4327	ASTM D4327
Reporting Limit:	-	-	10	-	50	15	15
Date Analyzed:	17-Aug-2022	17-Aug-2022	-	16-Aug-2022	-	18-Aug-2022	18-Aug-2022

* Results Reported on "As Received" Basis

N.D. - None Detected

Sherri Moore
Chemist

Quality Control Summary - All laboratory quality control parameters were found to be within established limits

ATTERBERG LIMITS
Summary Report
ASTM D-4318

Geo-Logic ASSOCIATES

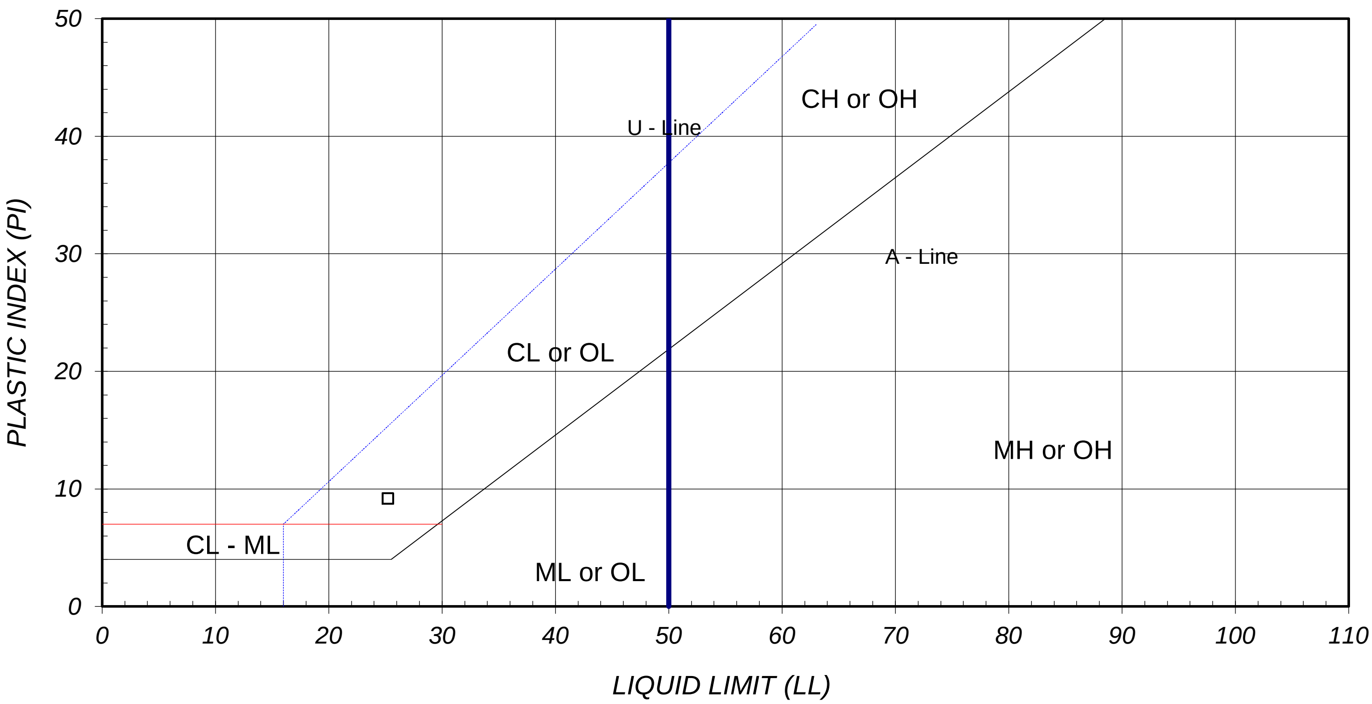
Client : Pacific Geotechnical Engineering | Project No: 2014.0069.400 | Lab Log No.: 3711

Project Name: SCUSD Portables - Scott Lane Elementary | Report Date: May 15, 2014

LSN	SYMBOL	SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX
3711E	□	DH-2 @ 3.5	Gray Sandy Clay	25	16	9

* Visual Classification based on ASTM D-2488

PLASTICITY CHART



This testing is based upon accepted industry practice as well as the test method listed. These results apply only to the samples supplied and tested for the above referenced job.

Print Date: 05/15/14 | Entered By: JL | Reviewed By: KH | LLN: 3711

Corrosivity Tests Summary

CTL # 226-240 **Date:** 5/15/2014 **Tested By:** PJ **Checked:** PJ
Client: Pacific Geatechnical Engineering **Project:** SCUSD Portables **Proj. No:** 2014.0069
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%		(Redox)		Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
Scott Lane DH1	-	1.5+3.0	-	-	4,470	14	33	0.0033	7.6	493	26	-	15.3	Grayish Brown Clayey SAND

APPENDIX C

RESULTS OF LIQUEFACTION ANALYSES

Pacific Geotechnical Engineering
16055 Caputo Drive, Suite D
Morgan Hill, CA 95037

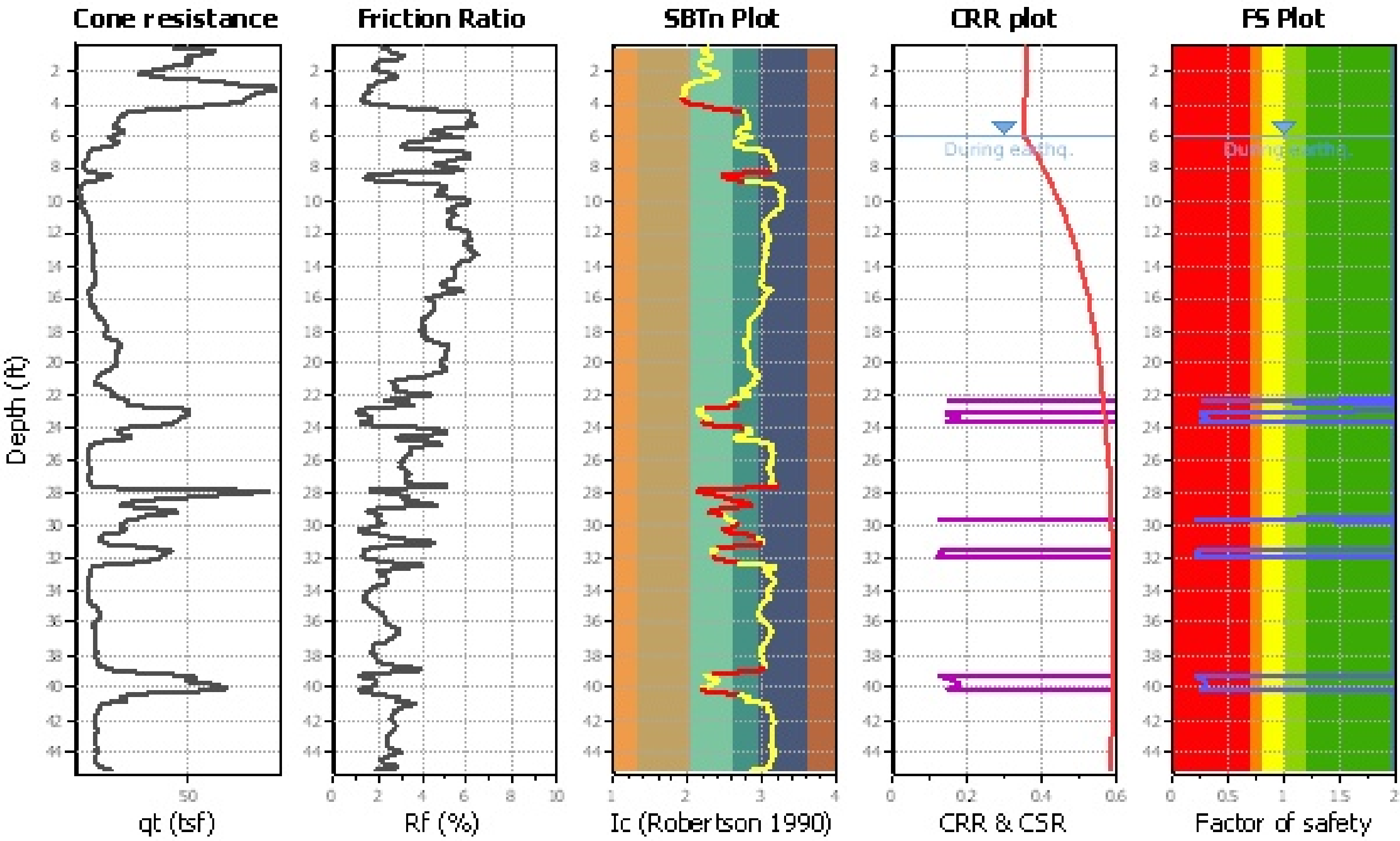
LIQUEFACTION ANALYSIS REPORT

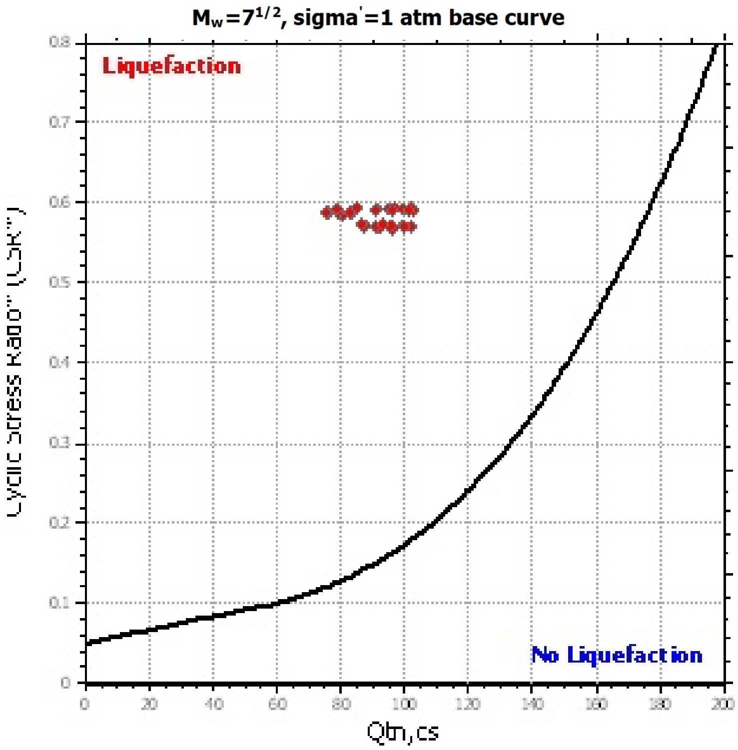
Project title : Scott Lane ES **Location : Santa Clara, CA**

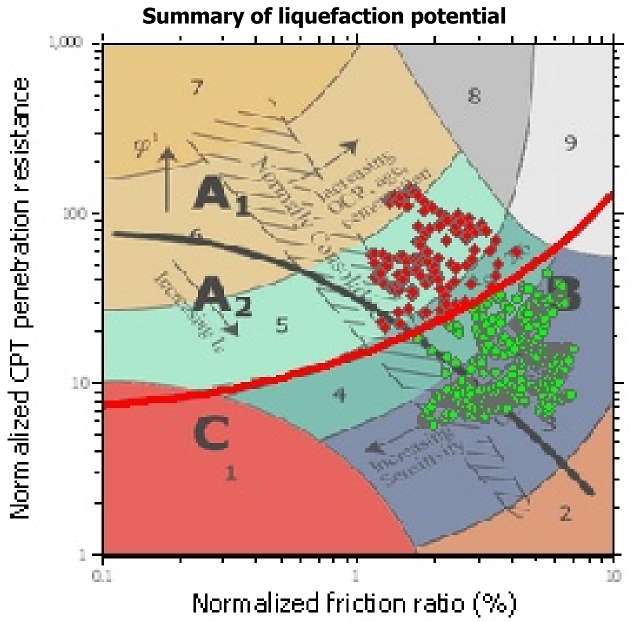
CPT file : ScottLane 1

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	6.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	6.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.55	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

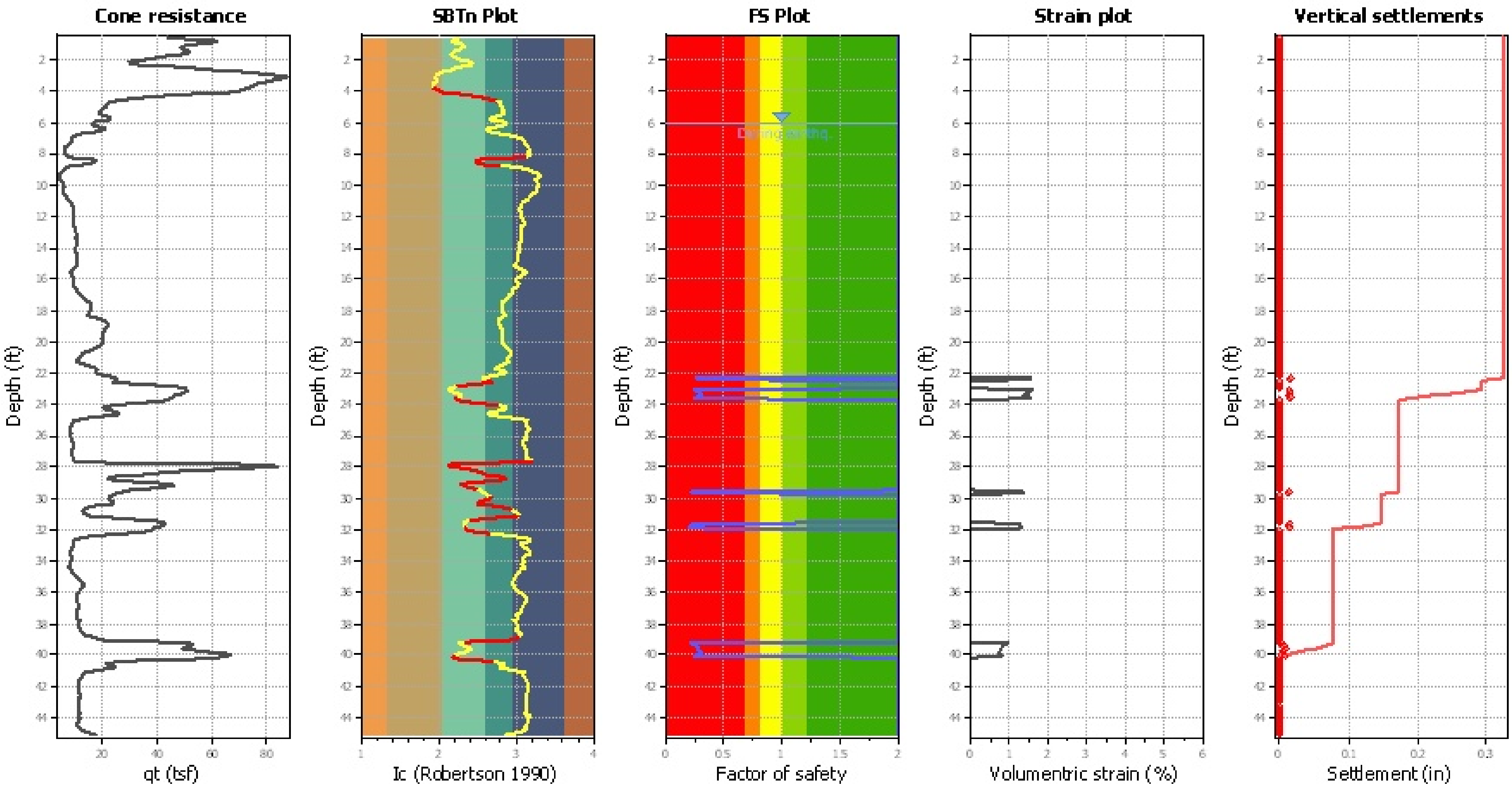






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Pacific Geotechnical Engineering
16055 Caputo Drive, Suite D
Morgan Hill, CA 95037

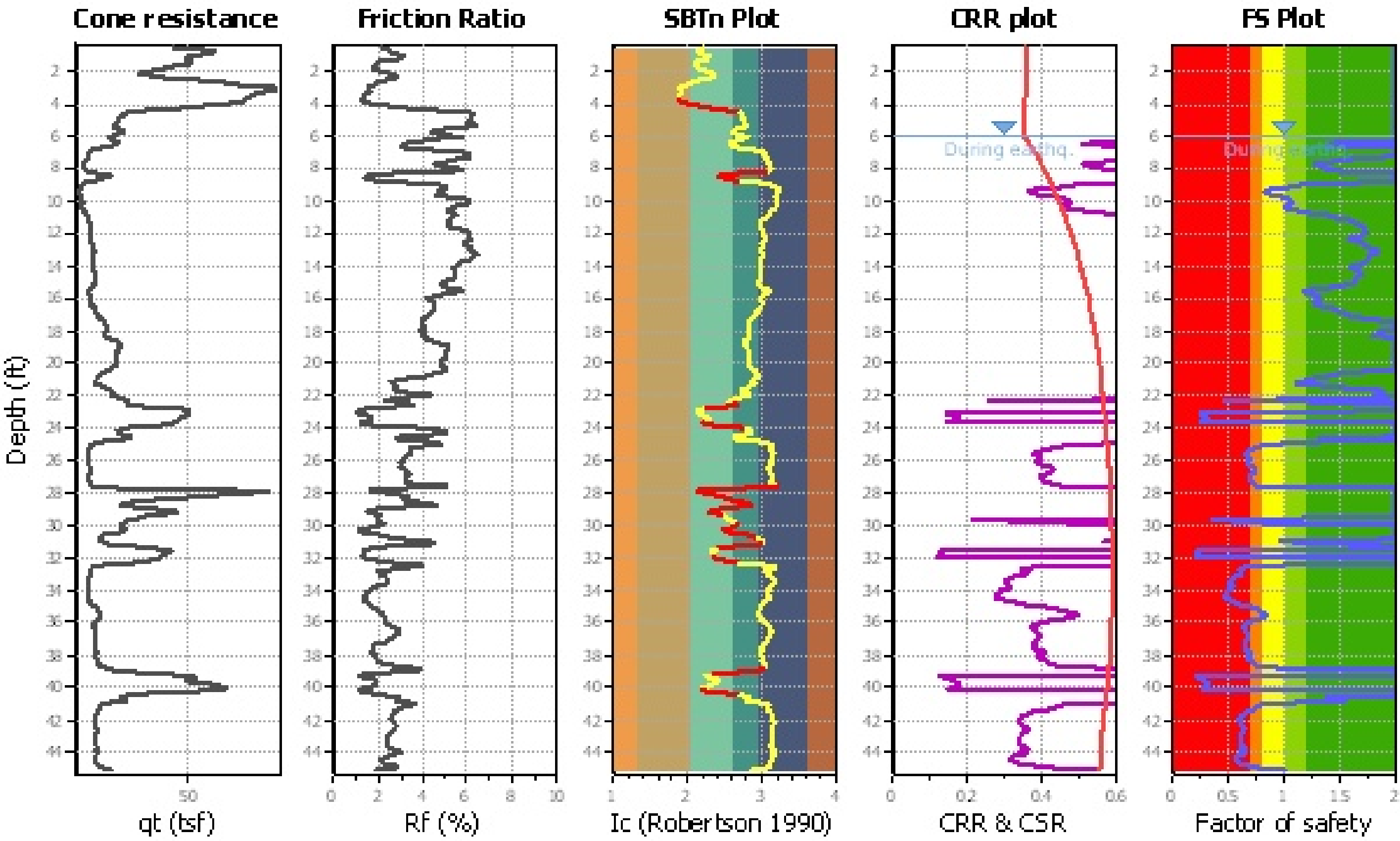
LIQUEFACTION ANALYSIS REPORT

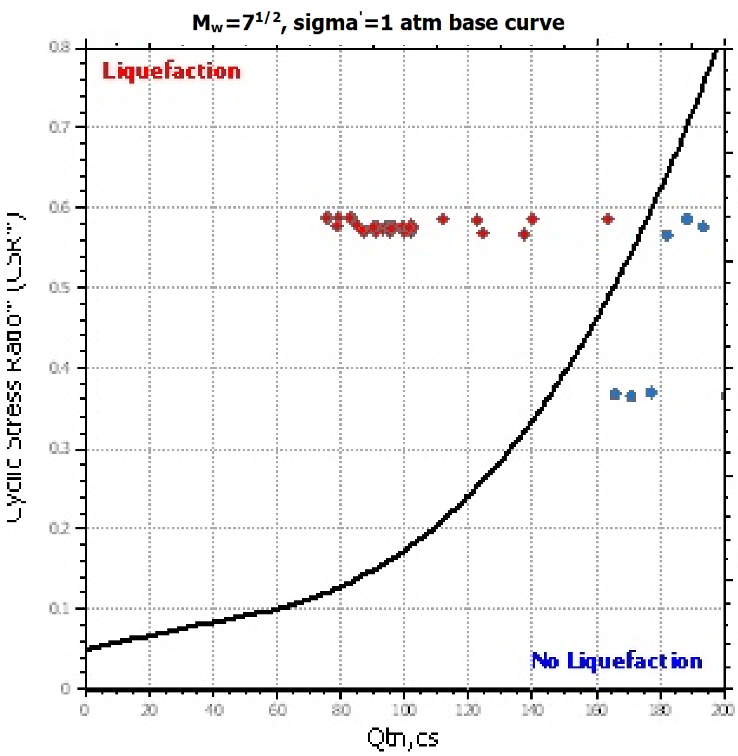
Project title : Scott Lane ES **Location : Santa Clara, CA**

CPT file : ScottLane 1

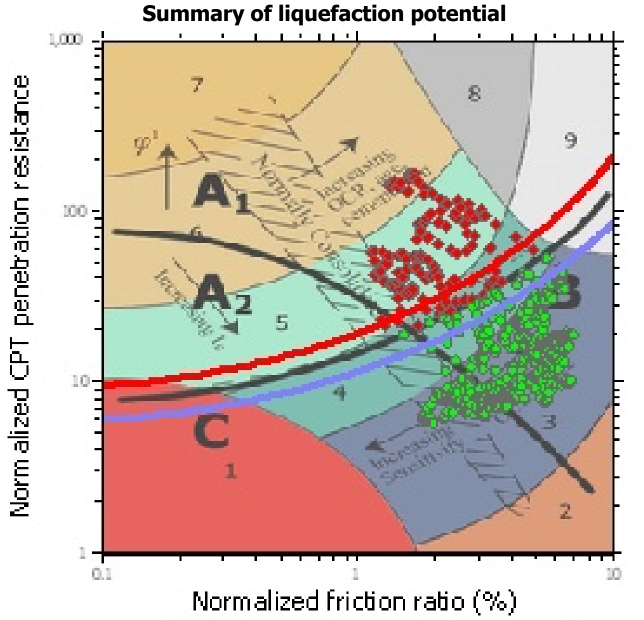
Input parameters and analysis data

Analysis method:	Robertson (2009)	G.W.T. (in-situ):	6.00 ft	Use fill:	No	Clay like behavior applied:	All soils
Fines correction method:	Robertson (2009)	G.W.T. (earthq.):	6.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.55	Unit weight calculation:	Based on SBT	K_σ applied:	No		



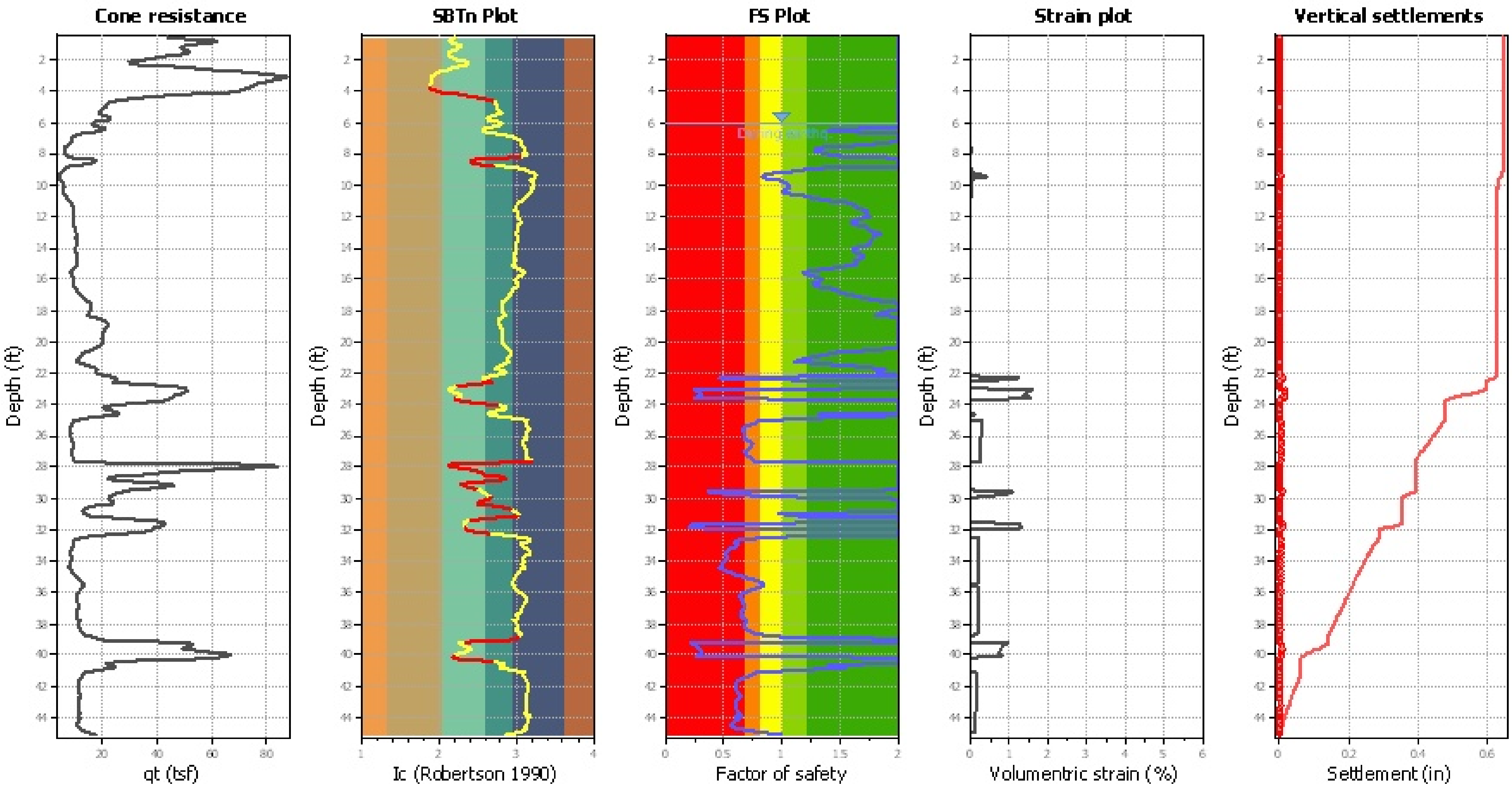


Summary of liquefaction potential



Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

LIQUEFACTION POTENTIAL ANALYSIS

REFERENCE: Liquefaction Resistance of soils, Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils, by T.L. Youd and I.M. Idriss, Journal of Geotechnical & Geoenvironmental Engineering, April 2001

Last revision Jul 08

Project Name: Scott Lane Elementary School **Proj. #:** PA22.1033 **Date:** 8/26/2022 **By:** BL

Design peak ground accel., PGA = 0.55 g | Hammer weight, Wh = 140 lbs | Hammer drop, d = 30 inches

Design earthquake magnitude = 7.5 | (MSF = 10^2.24/(Mw^2.56) = 1.00) | GS elev= 160

New fill thickness = 0 feet @ 125 pcf = 0 psf additional overburden | GW for liquefaction= 157.5

Soil Layer	Depth to Bottom of Layer, ft	Total Density, pcf	USCS	Total Vertical Stress @ bottom of layer, psf	Effective Vertical Stress @ layer bottom, psf	Boring #	Diameter*, Db, in	Depth to groundwater @ drilling, ft	GW depth below finish grade for liquefaction analysis, ft	Energy ratio correction Ce
0	0	0	0	0.0	0.0	DH-3	4	20	6	1.4
1	3.00	110.0	CL	330.0	330.0					
2	6.00	110.0	CL	660.0	660.0					
3	9.50	110.0	CH	1045.0	1045.0					
4	15.00	117.0	CH	1688.5	1688.5					
5	20.00	127.0	CH	2323.5	2323.5					
6	27.00	125.0	CH	3198.5	2761.7					
7	32.00	128.0	SC	3838.5	3089.7					
8	39.50	132.0	SP	4828.5	3611.7					
9	45.00	125.0	CI	5516.0	3956.0					
10	50.00	127.0	CI	6151.0	4279.0					
11				6151.0	6151.0					
12				6151.0	6151.0					
13				6151.0	6151.0					
14				6151.0	6151.0					
15				6151.0	6151.0					
16				6151.0	6151.0					
17				6151.0	6151.0					
18				6151.0	6151.0					
19				6151.0	6151.0					
20				6151.0	6151.0					

* use Db = 4.5, 6 or 8 inches

Correction Factor Ce	
Equipment variable	Values
Donut hammer	0.5 - 1.0
Safety hammer	0.7 - 1.2
Auto trip donut hammer	0.8 - 1.3

C2, Code for Sampler Type	Type of Sampler	O.D. of Sampler (in)	I.D. of Sampler shoe (in)	Sampler-Hammer Ratio for CLAY (x10^5)	Sampler-Hammer Ratio for Sand (x10^5)
1	SPT	2	1.375	4.19	0.89
2	2" MC	2.5	1.875	5.43	1.49
3	D&M	3	2.375	6.67	2.25
4	SPT1	2	0	7.94	1.32

N1cs = Blowcount corrected for fines content = alpha + beta*N160		
fines content (FC)	alpha	beta
<= 5%	0	1
5% - 35%	exp(1.76-(190/FC^2))	(0.99+FC^1.5/1000)
>35%	5	1.2

Correction Factors to SPT (modified from Skempton 1986)

Factor	Term	Equipment variable	Values
Overburden	Cn	(Pa/Pv')^0.5 <=1.7	
Energy Ratio	Ce	Donut hammer	0.5 - 1.0
		Safety hammer	0.7 - 1.2
		Auto trip donut hammer	0.8 - 1.3
Borehole diameter	Cb	65-115 mm (2.5"-4.5")	1.00
		150 mm (6")	1.05
		200 mm (8")	1.15
Rod length	Cr	< 3 m (10')	0.75
		3-4 m (10'-13')	0.80
		4-6 m (13'-20')	0.85
		6-10 m (20'-33')	0.95
		10-30 m (33'-98')	1.00
Sampling Method	Cs	Standard sampler	1.0
		Sampler w/o liners	1.1-1.3

Note: if (N1)60cs is over 30, soil is considered non-liquefiable

Depth below O.G. (ft)	Field blow count, N	Code for Sampler Type, C2	Fines Content (%)	Rod Length, L(rod) (ft)	Cs	Cr	Total Vertical Stress (psf)	Effective Vertical Stress (psf)	N' corrected for sampler size	Cn	(N1)60 = N*Cn*Cr*Ce*Cb*Cs	(N1)60cs (corrected for % fines)	Total Vertical Stress w/ Fill (psf)	Effective Vertical Stress @ design GW (psf)	rd	CSR	CRR(7.5) for clean granular soils	High Overburden Correction Factor	FS against liquefaction	Volumetric Strain (Tokimatsu & Seed 1987)	Seismic Ground Settlement (in)
30.00	33	3	23	30	1.0	0.95	3582.5	2958.5	17	0.82	19	25	3582.5	2084.9	0.921	0.566	0.29	0.99	0.50	0.0125	0.75
35.00	65	3	5	35	1.0	1.00	4234.5	3298.5	34	0.78	37	37	4234.5	2424.9	0.891	0.556	No liquef	0.94	2.00	0.0000	0.00
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						
															1.000						

Total liquefaction induced ground surface settlement, in = 0.75

GEOLOGIC AND SEISMIC HAZARDS EVALUATION
PROPOSED IMPROVEMENTS TO
SCOTT LANE ELEMENTARY SCHOOL

1925 SCOTT BOULEVARD
SANTA CLARA, CALIFORNIA

SEPTEMBER 9, 2022
PROJECT NO. PA22.1033.00

SUBMITTED TO:

Santa Clara Unified School District
1889 Lawrence Road
Santa Clara, CA 95051

PREPARED BY:

Geo-Logic Associates
6300 San Ignacio, Suite A
San Jose, California 95119
(408) 778-2818

GEOLOGIC AND SEISMIC HAZARDS EVALUATION
PROPOSED SCOTT LANE ELEMENTARY SCHOOL IMPROVEMENTS
1925 SCOTT BOULEVARD
SANTA CLARA, CALIFORNIA

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Log of Drill Holes DH-1 through DH-9 (this study)
Log of Drill Holes DH-1 through DH-2 (2014 study)
Log of CPT-1 (2014 study)

Appendix B – Laboratory Test Data
Laboratory Test Data (this study)
Laboratory Test Data (2014 study)

Appendix C – Results of Liquefaction Analyses
Results of Liquefaction Analyses

1. INTRODUCTION

This report presents the results of our engineering geologic and seismic hazards (geohazards) evaluation in support of the proposed improvements to Scott Lane Elementary School at 1925 Scott Boulevard, Santa Clara, California. Based on the results of our study, we conclude that the site is geologically suitable for the proposed improvements.

We understand from California Geological Survey (CGS), geologic and geotechnical reviewing agency for California Division of the State Architect (DSA), that portable buildings are subject to CGS review because of the common presence of students and staff. The current building code is the 2019 California Building Code (CBC). Many of the provisions in the 2019 CBC reference American Society of Civil Engineers (ASCE) 7-16 (issued in 2016).

Our firm has prepared a geotechnical study report for the project. The geotechnical study report is dated September 9, 2022, Project PA22.1033.

1.1 Project Location and Description

The site location is depicted on the Site Location and Seismic Hazard Zone Map (Figure 1) and Regional Geologic Map (Figure 2) of this report. The latitude and longitude of the site, in decimal degrees, are 37.3586 degrees north and -121.9582 degrees west, respectively.

The project will involve relocation of two existing portable buildings from the northwestern portion of the campus to the north-central portion of the campus, construction of a new portable building next to the two relocated portables, expansion and reconfiguration of the existing parking lot in the northwestern portion of the campus, new access driveways to the existing parking lot, new bicycle storage area, new TK play yard, new asphalt concrete pathways, and demolition of existing Building F.

Site grading associated with the proposed improvements is anticipated to involve cuts and fills of up to about 2 to 3 feet because of the essentially flat-lying topography across the project area. Deeper excavations will be necessary for installation of underground utilities.

The above project descriptions are based on information provided to us. If the actual project differs from those described above, Geo-Logic Associates (GLA) should be contacted to review our findings, conclusions, and recommendations and present any necessary modifications to address the different project development schemes.

1.2 Information Provided

The following information was provided to us for this study.

- Draft Master Plan drawings for Scott Lane Elementary School, dated August 16, 2022.

- An undated and untitled sketch showing designated boring locations.

- An undated and untitled drawing showing a layout of the existing improvements in the western portion of the campus.

1.3 Previous Studies by GLA

In 2014, our firm performed a geohazards evaluation and a geotechnical study for a portable building at the school, with preparation of the following documents.

- A report titled "Geotechnical Investigation, Proposed Portable Building, Scott Lane Elementary School, 1925 Scott Boulevard, Santa Clara, California," dated May 16, 2014.

- A report titled "Geohazards Evaluation, Proposed Portable Building, Scott Lane Elementary School, 1925 Scott Boulevard, Santa Clara, California," dated May 16, 2014.

1.4 Purpose and Scope of Services

The purpose of this study was to characterize the geologic conditions of the Scott Lane Elementary School campus; evaluate the geologic suitability of the site for the proposed improvements; evaluate seismic hazards; and develop seismic parameters for structural design. In preparing this report, we have consulted the following guidelines and publications: 1) CGS Special Publication 117A (Guidelines for Evaluating and Mitigating Seismic Hazards); 2) CGS Note 48 (Checklist for Review of Engineering Geology and Seismology Reports for Public Schools, Hospitals, and Essential Services Buildings); and 3) DSA IR A-4 (Geohazard Report Requirements: 2019 CBC).

For this study, we completed the following scope of work.

1. Reviewed available geologic maps and literature regarding the site and its environs, including the State of California and Santa Clara County geologic and geohazards maps, and our previous geohazards and geotechnical reports for the campus.

2. Researched and reviewed historic seismicity resulting in significant strong ground shaking in the site vicinity.

3. Reviewed historic aerial imagery encompassing the site.

4. Performed a site reconnaissance to observe current site conditions.

5. Reviewed subsurface information from our geotechnical study for this project and from our previous studies in the general vicinity of the project.

6. Analyzed the geologic and seismic information collected.

7. Developed peak ground acceleration for the site and performed a liquefaction assessment.

8. Developed conclusions regarding the geologic suitability of the site for the proposed project, with hazards addressed including liquefaction potential and other geologic hazards.

9. Prepared this report presenting our findings, conclusions, and recommendations.

Our scope did not include evaluation of the site or property for the potential presence of hazardous substances (i.e. environmental site assessment).

2. REGIONAL SETTING

2.1 Physical Setting and Site Terrain

The site is located south of San Francisco Bay, near the axis of the Santa Clara Valley, approximately half way across the distance between the Santa Cruz Mountains (to the west) and the Diablo Range (to the east). Locally, the ground surface is nearly flat, with very low gradient alluvial deposits derived from the Santa Cruz Mountains and the Diablo Range. The alluvial deposits on which the site sits were constructed primarily by the Guadalupe River, and Saratoga and Calabazas Creeks, in turn fed by small creeks draining the Santa Cruz Mountains and Diablo Range. The site is at an approximate elevation of 65 feet above mean sea level (msl), interpolated from 5-foot-interval contours on the USGS San Jose West 7.5' quadrangle (see Figure 1).

2.2 Drainage and Groundwater

The site is located east of Saratoga and Calabazas Creeks, and southwest of the Guadalupe River. Natural drainage in the area is generally toward the north, toward the very southern tip of San Francisco Bay.

Regional groundwater data was compiled by the California Geological Survey as they prepared Seismic Hazard Zone Report 058, San Jose West 7.5-minute Quadrangle that encompasses the site (CGS, 2002). Groundwater contouring shown on Plate 1.2 of the Seismic Hazard Zone Report indicates historically high groundwater depth at the site is about 9 feet.

During this study, groundwater was encountered at a depth of about 20 feet in our drill hole DH-3 at the time of drilling. The groundwater depth dropped to about 37.2 feet bgs after completion of drilling.

During our 2014 study, groundwater was encountered at a depth of 11 feet in our DH-1 at the time of drilling and at about 6 feet in Cone Penetration Test (CPT) probe CPT-1.

2.3 Regional Geologic Setting

The site is mapped by Wentworth and others (1999) as being at the transition from older alluvial fan deposits of Holocene age (map unit Qhf2) under much of the site to Holocene basin deposits (map unit Qhb) in the northeastern portion of the site (see Figure 2). In general, the alluvial deposits become finer in particle size with distance from the mountain front; the site is approximately two-thirds of the way from the range front to the modern Bay margin.

The older alluvial fan deposits (map unit Qhf2) are the "principal Holocene fans and associated terraces," and are described by Wentworth and others (1999) as consisting of "brown gravelly sand and sandy and clayey gravel, grading upward to sandy and silty clay, moderately dense to dense, coarser near the fan heads and upstream, deposited by flooding streams where they emerge from constrained channels of the uplands; include terrace deposits within some upland valleys; merge downslope into flood plain and basin deposits."

The basin deposits (map unit Qhb) are described as consisting of "dark-colored clay and very fine silty clay, rich in organic material, deposited beyond the levees and flood plains in the flood basins where stilling flood waters drop their finest sediment." Our experience indicates that alluvial deposits at this point along the fan profile can be somewhat internally variable, commonly including both finer and coarser lenses, reflecting lateral channel migration, and meander cut-offs.

Portions of Knudsen and others' (2000) geologic mapping (as well as unpublished mapping) were considered in preparation of a simplified Quaternary geologic map of the San Jose West quadrangle incorporated in the local Seismic Hazard Zone Map (CGS, 2002). Plate 1.1 of that report shows the site as being underlain by both Holocene alluvial fan (Qhf) deposits and Holocene levee (Qhl) deposits. A more recent regional Quaternary geologic and liquefaction study by Witter and others (2006) maintains Knudsen and others' geologic mapping.

2.4 Regional Geohazards Mapping

According to CGS's Seismic Hazard Zone map for the San Jose West 7.5' quadrangle (CGS, 2002), the site is located in a liquefaction hazard zone but not in a landslide hazard zone (see Figure 1). Our recent review at the CGS Earthquake Zones of Required Investigation website (in August 2022) confirms that the project site is located in a State liquefaction hazard zone, but not in an earthquake fault zone nor a landslide hazard zone.

The site is located within a liquefaction hazard zone, as defined by the County of Santa Clara (Santa Clara County, 2012). The County's liquefaction zone closely matches that of CGS in the general site vicinity. The site does not lie within a County of Santa Clara fault rupture hazard zone, or "combined hazards" zone (including landsliding).

Knudsen and others (2000) prepared a nine-county evaluation of liquefaction potential that encompasses the site. The site is shown as lying within an area of "moderate" liquefaction susceptibility.

As noted above, the regional liquefaction potential prepared by Witter and others (2006) maintains Knudsen and others' geologic mapping and assessment of liquefaction susceptibility as "moderate."

Knudsen also catalogued instances of ground deformation resulting from the 1906 San Francisco earthquake, and the 1989 Loma Prieta earthquake. There are no reported deformation localities near the site, and virtually none are reported on the basin deposit map unit that underlies the site, with the exception of sites along the banks of the larger creeks such as the Guadalupe River and Coyote Creek. (Knudsen and others, 2000).

2.5 Faulting and Seismicity

2.5.1 Local Faults

As discussed above, the project site is not located in a State of California nor a County of Santa Clara fault rupture hazard zone.

The site's location places it in an area which has been repeatedly closely scrutinized by others for evidence of active faulting and surface deformation, with the most recent evaluations focusing on deformation associated with the Monte Vista/Shannon fault, which is the most outboard and most recent/active of the family of west-dipping thrusts rooted in the Santa Cruz Mountains bend of the San Andreas fault (McLaughlin and others, 2001). None has been observed in the site vicinity that are of concern to the project.

Lineaments clustered near the Santa Cruz Mountains rangefront have been the focus of investigations since the 1989 Loma Prieta earthquake (Hitchcock and others, 1994); the site is located outboard of those zones of study.

2.5.2 Seismic Sources

Potential sources of significant earthquake ground shaking at the site are presented and discussed below under Section 4 (Seismic Hazard Evaluation).

3. SITE CONDITIONS

3.1 Surface Conditions

The school property is bordered by Scott Boulevard on the west, residential properties and Cabrillo Avenue to the north, apartment complexes and Warburton Avenue to the south, and residential properties fronting onto Don Avenue and Monroe Street to the east. Access to the site is from Scott Boulevard. Existing improvements are located mainly in the western portion of the campus and the eastern portion of the campus is currently a grass field. There are scattered trees throughout the campus.

Topography across the campus is quite flat, and nearly level. The site surface slopes down gently towards the northeast. Total relief across the school campus is about 3 to 7 feet, based on our review of topographic information on Google Earth.

Because of the site’s location on a very gently northward-sloping alluvial surface, the details of surface drainage patterns are not pronounced, and are much modified by campus development. Locally on the campus, and offsite in the surrounding developed areas, area drains and gutters collect surface runoff and convey it to the City storm drain network.

The site for the three portable buildings is a grass field area in the north-central portion of the campus, between the existing restroom building and the asphalt concrete play courts.

3.2 Existing Improvements and Previous Land Use/Grading

The Scott Lane Elementary School campus (see Figure 5) has several one-story buildings (permanent and portable), paved access driveways, a paved parking lot, paved playground, concrete flatwork, and landscaping. The eastern portion of the campus is primarily a grass field. There are no high retaining walls.

Interspersed between the buildings are walkways, parking areas, and landscaped areas. Details regarding the type and dimension of the existing structure foundations are not known.

Previous land use in the site vicinity was primarily as orchard land, which yielded to urban residential usage over time between roughly WWII and the 1960’s. Widely scattered remnant small orchard pockets are still visible in residential backyards in the general vicinity.

3.3 Subsurface Information

3.3.1 Subsurface Data – Regional

Regional 3-D geologic and seismic velocity syntheses by the US Geological Survey (USGS) of Santa Clara Valley subsurface geology interpret the site to be underlain by “alluvial fan” deposits of

Quaternary age, overlying Franciscan Complex metamorphic rocks at depth. Dedrick and others (1975) contoured the base of "water-bearing" sediments for the northern Santa Clara Valley – essentially the unconformable base of the Santa Clara Formation. Our review of Plate 4 "Approximate Depth to Base of Water-bearing Sediments" indicates two wells or test holes in the vicinity of Scott Lane Elementary School which extended to 697 and 1,000 feet did not encounter nonwatery-bearing rock.

Holzer and Galloway (2005) studied impacts of land subsidence caused by withdrawal of underground fluids in the United States. Our review of Figure 5 in their technical paper indicates subsidence of roughly 6 to 8 feet in the vicinity of the school campus between 1934 and 1967. Due to groundwater recharge program by the Santa Clara Valley Water District, this trend has been halted.

3.3.2 Subsurface Exploration – This Study

As part of our geotechnical study for the project, a total of nine exploratory drill holes (DH-1 through DH-9) were advanced on August 9, 2022 using a truck-mounted Mobile B-53R drilling rig equipped with 8-inch diameter hollow-stem augers. Depth of exploration ranged between roughly 10 and 50 feet bgs. The approximate locations of these nine drill holes are shown on Figure 5.

Soil samples were obtained using a 3-inch O.D. (2½-inch I.D.) split-barrel sampler. Soil samples were obtained by driving the samplers up to 18 inches into the earth material using a 140-pound automatic trip hammer falling 30 inches in DH-3 and DH-6. A down-hole safety hammer was used for the other drill holes. The number of blows required to drive the sampler was recorded for each 6-inch penetration interval. The number of blows required to drive the sampler the last 12 inches, or the penetration interval indicated on the log when harder material was encountered, is shown as blows per foot (blow count) on the drill hole logs.

In the field, our personnel visually classified the materials encountered and maintained a log of each drill hole. Visual classification of soils encountered in our drill holes was made in general accordance with the Unified Soil Classification System (ASTM D 2487 and D 2488). The results of our laboratory tests were used to refine our field classifications. Two Keys to Soil Classification, one for fine grained soils and one for coarse grained soils, are included in Appendix A, together with our drill hole logs.

3.3.3 Subsurface Exploration – GLA 2014 Study

Our 2014 subsurface exploration program included two exploratory drill holes (DH-1 and DH-2) and one CPT probe (CPT-1). The drill holes were advanced on April 19, 2014 with a truck-mounted Mobile B53 drilling rig equipped with 8-inch-diameter hollow-stem augers, to depths of about 15 and 20 feet bgs. CPT-1 was performed by John Sarmiento & Associates on April 19, 2014, to a depth of about 45 feet bgs. Logs of the drill holes and CPT-1 from our 2014 study are included in Appendix A and the approximate locations of these drill holes and CPT probe are shown on the Figure 5 of this report.

3.3.4 Subsurface Conditions – This Study

Drill holes DH-1 and DH-2 were located east of classroom Building F. In these two drill holes, lean clay of low plasticity was encountered to the maximum explored depth of about 10 feet below ground surface (bgs). The upper clay is very stiff to hard in consistency and the deeper clay is stiff to very stiff.

Drill hole DH-3 was located in the south-central portion of the campus. In DH-3, a layer of very stiff lean clay of low plasticity was encountered to a depth of about 9.5 feet bgs. This clay is underlain by firm to hard fat clay of high plasticity to a depth of about 27 feet bgs, medium dense to dense clayey sand to a depth of about 32 feet bgs, dense to very dense poorly graded sand to a depth of about 37.5 feet bgs, firm to stiff clay of intermediate plasticity to the maximum explored depth of about 50 feet bgs.

Drill holes DH-4, DH-5, and DH-6 were located in the existing parking lot area. A pavement section consisting of roughly 4 inches of asphalt concrete over roughly 7 inches of base was encountered at ground surface. The pavement section is underlain by lean clay of low plasticity to the maximum explored depth of 10 feet in DH-4 and DH-5, and to about 11 feet in DH-6. The clay in DH-6 from 11 feet to the bottom of the hole at 20 feet was logged as a fat clay. The clay in the upper 6 to 7 feet is stiff to hard and the deeper clay is soft to stiff.

Drill hole DH-7 was located in the new driveway area. Soil encountered in this hole consists of lean clay of low plasticity to the maximum explored depth of about 10 feet bgs. The upper clay is stiff to very stiff and the deeper clay is firm to stiff.

Drill holes DH-8 and DH-9 were located in the proposed portable building area east of the existing restroom building, in the north-central portion of the campus. In these drill holes, lean clay of low plasticity was encountered to the maximum explored depth of about 10 feet bgs. The upper clay is very stiff to hard and the deeper clay is soft to very stiff.

For a more detailed description of the earth materials encountered in these drill holes, refer to the drill hole logs in Appendix A. Stratigraphic correlations across the project site are illustrated in Cross-sections A-A’ and B-B’, see Figures 6 and 7, respectively.

3.3.5 Subsurface Conditions – GLA 2014 Study

A layer of hard clay was encountered in DH-1 (2014) to a depth of approximately 3 feet bgs. This surficial clay is underlain by hard sandy lean clay with gravel to a depth of about 5 feet bgs, clayey sand to sandy lean clay to a depth of about 8 feet, and firm to stiff clay to the maximum explored depth of 20 feet bgs.

In DH-2 (2014), a layer of hard clay was encountered to a depth of about 2 feet bgs. This clay is underlain by hard sandy lean clay to a depth of about 5 feet bgs, clayey sand to sandy lean clay to a depth of about 8.5 feet bgs, and firm to stiff clay to the maximum explored depth of 15 feet bgs.

In our CPT-1, the interpreted soil behavior types include predominantly cohesive soils with thin interbeds of granular soils to the maximum explored depth of about 45 feet bgs. Based on the interpreted soil properties, the cohesive soils are generally stiff to hard in consistency and the granular soils are generally medium dense in relative density.

3.3.6 Groundwater Data

Groundwater was encountered in DH-3 for this study, at a depth of about 20 feet bgs at the time of drilling and at a depth of about 37.2 feet bgs after completion of drilling. Groundwater was not encountered in the other eight drill holes for this study because they were too shallow. In our 2014 study, groundwater was encountered at a depth of about 11 feet bgs in DH-1 and at a depth about 6 feet bgs in CPT-1.

Historical high groundwater was estimated to be about 9 feet based on our review of Plate 1.2, "Depth to historically high ground water, historical liquefaction sites, and locations of boreholes, San Jose West 7.5-minute quadrangle, California," Seismic Hazard Zone Report 058, prepared by California Geological Survey, Department of Conservation, 2002.

It should be noted that fluctuations in the groundwater level may occur due to seasonal variations in rainfall and temperature, water level in the adjacent creek, pumping from wells, regional groundwater recharge program, irrigation, or other factors that were not evident at the time of our investigation.

3.3.7 Laboratory Testing

For this study, laboratory tests were performed on soil samples collected from DH-1 through DH-9 and on a bulk sample from the parking lot area. The tests included water content, dry density, Atterberg Limits, percent passing No. 200 sieve, grain size distribution, and R-value. Most of the laboratory test results are presented on our drill hole logs at the corresponding sample depth. Graphic presentations of the Atterberg Limits, grain size distribution, and R-value tests are included in Appendix B of this report.

In addition to geotechnical testing, a selected soil sample from this study was sent to CERCO Analytical for corrosivity testing. A brief report from CERCO Analytical with the corrosivity test results is included in Appendix B. A corrosivity test report from Cooper Testing Laboratory from our 2014 study is also included in Appendix B.

4. SEISMIC HAZARD EVALUATION

4.1 General

This section presents a summary of the site-specific seismic hazards for the Scott Lane Elementary School campus. The intent of this seismic hazard evaluation is to address requirements in the DSA IR A-4.13 (rev. 6/11/21) and the 2019 CBC. For applicable school site projects, geologic and seismic hazard evaluations are reviewed by the CGS for the DSA.

According to Section 2.3 of DSA IR A-4.13, a geohazard report is required for all new buildings or structures on existing sites, except as delineated in Section 3 of IR A-4.13. This project does not meet the exceptions outlined in Section 3 of IR A-4.13.

The 2019 California Administrative Code (CAC) Chapter 4 Section 4-317(e) requires a geologic and earthquake hazard report to be submitted for all new school sites and for all construction of existing school sites located in a Seismic Hazard Zone, an Alquist-Priolo Earthquake Fault Zone, or in a seismic hazard zone designated in the Safety Element of a Local General plan. Section 1803A.6 of the 2019 CBC discusses the requirements for a geohazard report.

4.2 Site Classification and Seismicity

4.2.1 Site Classification for Seismic Design

For this study, blow counts (uncorrected) measured in the nine drill holes ranged from 4 blows per foots (bpf) to 65 bpf. The lowest blow count of 4 bpf was found in DH-5 in a layer of lean clay at a depth of approximately 9 feet bgs.

For our 2014 study, blow counts (uncorrected) measured in those drill holes ranged from 8 bpf to 34 blows/6-inch penetration. The lowest blow count of 8 bpf was found in a clay layer in DH-2 at a depth of approximately 9 feet bgs.

The above information and our assessment of the CPT-1 data from our 2014 study, following the procedures outlined in Section 20.4 of ASCE 7-16, indicates a Site Class D for the project area.

The site would normally be Site Class F because it is underlain by potentially liquefiable soils. But if the fundamental period of vibration of the proposed structures is less than 0.5 second, the site class can be determined by assuming there is no liquefaction (ASCE 7-16 Section 20.3.1). Therefore, Site Class D was selected for the project.

4.2.2 Proximity to Seismic Sources

The Greater San Francisco Bay Area is seismically dominated by the active San Andreas Fault system, the tectonic boundary between the northward moving Pacific Plate (west of the fault) and the North American Plate (east of the fault). This movement is distributed across a complex system of generally strike-slip, right-lateral, and subparallel faults.

Potential sources of significant earthquake ground shaking at the site include several active and potentially active faults in the general San Francisco Bay area, as well as faults farther afield. Figure 3 shows selected major active seismic sources in the region encompassing the site, classed by level of activity. The faults shown on Figure 3 were first compiled on the State's Fault Activity Map (Jennings, 1974; Jennings and Bryant, 2010). This map has now been integrated into the US Geological Survey's Quaternary Fault and Fold Database and made available as a .kmz "drape" over Google Earth terrain files.

The distance to a seismic source (fault) is defined by the NGA relationships as the closest distance to the seismogenic zone, be it in the subsurface or at the surface; distances may therefore differ from distances measured on the ground surface. The distances shown on the table below are for reference only, as they are horizontal distances from the site to the surface trace of the seismic source, and not necessarily the closest distance to a (dipping) seismogenic zone. These distances were measured using the US Geological Survey's Quaternary Fault and Fold Database, with major faults listed in approximate order of distance from the site; not all sources are listed in the summary table below.

Table 4.2.2-1 Approximate Distance and Orientation Between Site and Nearby Faults

Fault Name	Approximate Distance	Orientation from Site
Monte Vista-Shannon	10½ km	Southwest
Hayward	11¼ km	East
San Andreas (Sta. Cruz Mts)	16¼ km	Southwest
Calaveras (central segment)	16½ km	East
Sargent	24¾ km	South
Zayante-Vergeles	37 km	Southwest
San Gregorio	38¾ km	Southwest
Greenville	42¼ km	East
Monterey Bay-Tularcitos	47½ km	South

4.2.3 Historic Seismicity

We researched historic seismicity affecting the site using several resources, including Sleeter and others (2004), Toppozada and others (1978), and Toppozada and others (2000). Figure 4 shows epicenters for earthquakes of magnitude 5 or greater, for the time period 1800 – 1999 (Toppozada and others [2000]; CGS Map Sheet 49). Shown as well are the areas considered to have been "damaged" by these earthquakes. Both the epicenters and estimates of magnitude are quite approximate for events predating modern seismic networks. Damage areas as well are approximate, as they are greatly influenced by type of construction and density of settlement, and depend in part on the accuracy and completeness of newspaper and historic accounts.

As Figure 4 shows, historic damaging earthquakes that affected the site vicinity have been fairly tightly clustered along the San Andreas, Calaveras and Hayward faults. Historic accounts indicate that damaging historic earthquakes have been clustered primarily along non-creeping segments of the San Andreas, Hayward and Calaveras faults. A regional synthesis of damage accounts (Toppozada and others, 2000) indicates that a minimum of about 5 events have caused ground shaking of Modified Mercalli Intensity VII or greater at the site. Ground shaking of intensity VII is defined as "People have difficulty standing. Drivers feel their cars shaking. Some furniture breaks. Loose bricks fall from buildings. Damage is slight to moderate in well-built buildings; considerable in poorly built buildings."

The more recent seismicity bears out these same trends. Sleeter and others (2004) catalogs earthquakes greater than magnitude 1.5 for 1970 – 2003. The epicenters for this time period are strongly clustered along the major mapped faults, the closest being the San Andreas, San Gregorio and faults closely associated with the San Andreas (e.g. Sargent).

Of historic earthquakes affecting the site vicinity, perhaps the most notable apart from San Andreas and Hayward fault events are 10 earthquakes greater than moment magnitude (M_w) 5.0 that occurred along the Calaveras fault during historic time alone: 1861, 1897, 1899, 1911, 1943, 1949, 1955, 1979, and 1984 (Witter and others, 2003). All but the first of these occurred on the central segment. The magnitudes for many of these earthquakes were fairly close, suggesting a characteristic earthquake of M_w 6.2 for the central segment.

Our review of the probabilistic earthquake shaking hazard map available on the Association of Bay Area Governments (ABAG) website indicates the project area is classified as severe shaking (MMI 8). According to USGS, the effects of MMI 8 include "slight damage in specifically designed structures; considerable damage in ordinary substantial buildings with partial collapse; great damage in poorly built structures; fall of chimneys, factory stacks, columns, monuments, walls, and heavy furniture overturned."

4.2.4 Future Seismicity

The Working Group on California Earthquake Probabilities' (WGCEP) estimates of the probabilities of major earthquakes are now in their sixth iteration, with the greatest changes in approach being the inclusion of multifold rupture scenarios, in the progressive consideration of more potential seismic sources, the possibility of earthquakes on unrecognized faults, and the inclusion of the notion of fault "readiness". Current estimates (WGCEP, 2014) for the San Francisco region indicate a 72% probability of a large (magnitude 6.7 or greater) earthquake in the San Francisco Bay area as a whole over the 30-year period beginning in 2014; this overall probability is greater than the previous (WGCEP, 2007) probability of 63%, due mainly to the inclusion of multi-fault rupture scenarios. The estimate for the Calaveras fault alone is 14.4% (revised up from the 7% presented by WGCEP, 2007); for the (northern) San Andreas fault alone, 27.4% (revised upward from the WGCEP (2007) value of 21%); and for the Hayward fault, 45.3% (revised upward from the WGCEP (2007) value of 31%).

4.3 Ground Motion

According to the 2019 California Building Code (CBC) and American Society of Civil Engineers (ASCE) Standard 7-16, the spectral response acceleration at any period can be taken as the lesser of the spectral response accelerations from the probabilistic and deterministic ground motion approaches. The U.S. Seismic Design Maps tool available at the Structural Engineers Association of California (SEAOC) website was used for this purpose to retrieve seismic design parameter values for design of buildings at the subject site. Two levels of ground motions are considered in the Application: Risk-targeted Maximum Considered Earthquake (MCE_R) and Design Earthquake (DE), with both probabilistic and deterministic values defined in terms of maximum-direction rather than geometric-mean, horizontal spectral acceleration (S_a). The probabilistic MCE_R spectral response accelerations are represented by a 5 percent damped acceleration response spectrum having a 1 percent probability of collapse within a 50-year period and in the direction of the maximum horizontal response. The probabilistic Design Earthquake (DE) S_a value at any period can be taken as two-thirds of the MCE_R S_a value at the same period.

Using the SEAOC Seismic Design Maps application, a site Class D (see Section 4.2.1 above), and the latitude and longitude of the site (latitude 37.35858º N, longitude -121.95852º W), the calculated geometric mean peak ground acceleration adjusted for site class effects (PGA_M) for the MCE_G (Geometric Mean Maximum Considered Earthquake) is 0.55g.

4.4 Seismic Design Parameters

Design of the proposed structures should comply with design for structures located in seismically active areas. Structures should be designed in accordance with the requirements of governing jurisdictions and applicable building codes. GLA evaluated ASCE 7-16 seismic design parameters for the site using the SEAOC U.S. Design Maps application. The table below lists the seismic design parameters for the site. Note that, because the Mapped Spectral Acceleration at 1.0-second Period (S_1) value for the site is larger than 0.2 g, a site response analysis may be required, in accordance with Section 11.4.8 of ASCE 7-16.

Table 4.4-1 Seismic Design Parameters Based on 2019 CBC & ASCE 7-16	
Seismic Design Parameter	**Value**
Site Class	D
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.7
Mapped Spectral Acceleration at 0.2-second Period, S_s	1.5 g
Mapped Spectral Acceleration at 1.0-second Period, S_1	0.6 g
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	1.5 g
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	1.02 g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.0 g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.68 g
Long-period Transition Period, T_L	12 sec.

Note: The site would be Site Class F because it is underlain by liquefiable soils. But if the fundamental period of vibration of the structures is equal to or less than 0.5 second, the Site Class can be determined by assuming there is no liquefaction (ASCE 7-16 Section 20.3.1). Therefore, Site Class D was selected for this project. If the fundamental period of vibration of the structures is larger than 0.5 second, contact our office for a site-specific seismic response analysis.

4.5 Liquefaction Potential

Soil liquefaction is a phenomenon in which saturated granular soils, and certain fine-grained soils, lose their strength due to build-up of excess pore water pressure during cyclic loading, such as from earthquakes. Soils most susceptible to liquefaction are saturated, clean, loose, fine-grained sands and non-plastic silts. Certain gravels, plastic silts, and clays are also susceptible to liquefaction. The primary factors affecting soil liquefaction include: 1) intensity and duration of seismic shaking; 2) soil type; 3) relative density of granular soils; 4) moisture content and plasticity of fine-grained soils; 5) overburden pressure; and 6) depth to ground water.

The project site is located in a CGS Earthquake Zones of Required Investigation for liquefaction and a Santa Clara County liquefaction hazard zone (Santa Clara County, 2012).

We assessed the liquefaction potential at the project site based on CPT-1 from our 2014 study and DH-3 from this study. The assessment was based on a peak ground acceleration of 0.55g, earthquake moment magnitude of 7.5, and a groundwater level of 6 feet bgs. Based on CPT-1, the estimated liquefaction-induced total ground settlement is about 0.3 inch for sand soil only and about 0.65 inch for sand and clay (potential cyclic softening) soils. Based on DH-3, the estimated liquefaction-induced total ground settlement is about 0.75 inch for sand soil only and the clay soils are generally not susceptible to cyclic softening because their plasticity indices are greater than 12, based on guidelines by Bray and Sancio, 2006. The results of our liquefaction assessment are presented in Appendix C of this report.

4.6 Lateral Spreading

Lateral spreading is horizontal movement of soil toward a free face, such as a creek bank, typically associated with liquefaction. Liquefaction-induced lateral spreading can also occur on mild slopes (flatter than 5%) underlain by loose sands and shallow groundwater. If liquefaction occurs, the unsaturated overburden soil can slide as intact blocks over the lower, liquefied deposit, creating fissures and scarps. The potential for lateral spreading in general mirrors the potential for liquefaction, and the depth of the liquefiable soil layers with respect to the creek banks.

The nearest significant free face is Saratoga Creek, located approximately 3,600 feet northwest of the site. We therefore judge the potential for lateral spreading to adversely affect the proposed improvements to be low.

4.7 Seismically-induced Settlement

As noted above, we conclude that some of the granular soils underlying the site are subject to liquefaction, with estimated potential liquefaction-induced ground settlement of less than about 0.75 inch.

Potential settlement as a result of dynamic compaction of granular soils above the groundwater table is low because the soils above groundwater are predominantly cohesive soils.

The above estimated settlement values are in addition to settlements which may result from foundation loads.

4.8 Other Geologic Hazards

This section addresses other geologic hazards listed in CGS Note 48.

- Our scope of work excludes a Phase I environmental site assessment of the site, and characterization of hazardous materials. Nevertheless, we are not aware of naturally occurring hazardous materials present at the site (e.g. serpentinite or tremolite with asbestiform mineral habit; methane, hydrogen sulfide; petroleum).

- Hydro-collapse of soils is a phenomenon that is typically associated with dry-climate settings, rather than a setting such as distal alluvial fan settings adjacent to the marine-influenced climate fringing the San Francisco Bay. In our judgment, the potential for hydro-collapse of on-site soils is very low. Furthermore, the site has been subjected to agricultural irrigation (commonly flood irrigation under early farming practices), and irrigation of non-paved lawn areas in years past.

- The site is located on flat land and not in a State of California nor a Santa Clara County landslide hazard zone. The possibility of landslides to occur at the site is remote.

- Our analysis on DH-3 of this study suggests the clay layers are generally not susceptible to cyclic softening because their plasticity indices are greater than 12, based on guidelines by Bray and Sancio, 2006.

- The results of our Atterberg Limits tests from this study and our 2014 study suggest the near-surface soil has a low plasticity which generally corresponds to a low expansion potential.

- Holzer and Galloway (2005) studied impacts of land subsidence caused by withdrawal of underground fluids in the United States. Our review of Figure 5 in their technical paper indicates subsidence of roughly 6 to 8 feet in the vicinity of the school campus between 1934 and 1967. Due to groundwater recharge program by the Santa Clara Valley Water District, this trend has been halted.

- The site is not located in proximity to an active volcanic center (Jennings and others, 2010).

- According to the ASCE Tsunami Hazard Tool, the Scott Lane Elementary School campus is not in a tsunami design zone.

- According to FEMA National Flood Hazard Layer FIRM Map Panel 227 of 805, effective May 2009, the Scott Lane Elementary School campus is located in a Zone X with 0.2 percent annual chance flood hazard, and the Calabazas Creek is located in Zone A without a base flood elevation.

- Our review of information from the Department of Water Resources (DWR) Division of Safety of Dams (DSOD) indicates the school campus is located in an area with extremely high dam breach inundation hazard from Lenihan Dam.

- The site is not underlain by earth materials known to emit significant quantities of radon gas. According to the California - EPA (Environmental Protection Agency) Map of Radon Zones, Santa Clara County is in Zone 2 which has a “moderate” potential for average indoor radon screening levels ranging from 2 to 4 pCi/L.

- The site is underlain by several hundred feet of alluvium. Therefore, we judge the potential for naturally occurring asbestos such as in serpentinite rock is unlikely.

- Corrosivity testing has been performed during this and our 2014 studies. A report from CERCO Analytical and a report from Cooper Testing Laboratory summarizing their corrosivity test results are included in Appendix B of this report.

5. CONCLUSIONS – GEOHAZARDS

This section summarizes our major conclusions, based on the findings of this study presented above.

5.1 General Summary

In our judgment, the site is geologically suitable for the proposed improvements.

5.2 Primary Seismic Hazards

In our judgment, the potential for fault ground rupture is low at the project site.

5.3 Secondary Seismic Hazards

In our judgment, the potential for strong earthquake ground shaking at the site is high. Seismic design criteria and their derivation are presented above, and elaborated on in our companion geotechnical report.

Our liquefaction assessment indicates the presence of soils subject to liquefaction, with estimated total ground settlement of about 0.75 inch.

In our judgement, the potential for lateral spreading to affect the proposed site is low.

5.4 Geotechnical Considerations

Our companion geotechnical investigation report addresses geotechnical characteristics of soils at the site, including expansion potential, corrosion potential, and other special characteristics. Geotechnical design criteria are presented in that report, including foundation recommendations for mitigation of potential liquefaction-induced settlements.

6. LIMITATIONS

In preparing the findings and professional opinions presented in this report, Geo-Logic Associates (GLA) has endeavored to follow generally accepted principles and practices of the engineering geologic and geotechnical engineering professions in the area and at the time our services were performed. No warranty, express or implied, is provided.

The conclusions and recommendations contained in this report are based, in part, on information that has been provided to us. In the event that the general development concept or general location and type of structures are modified, our conclusions and recommendations shall not be considered valid unless we are retained to review such changes and to make any necessary additions or changes to our recommendations. To remain as the project Geotechnical Engineer-of-record, GLA must be retained to provide geotechnical services as discussed under the Post-report Geotechnical Services section of this report.

Subsurface exploration is necessarily confined to selected locations and conditions may, and often do, vary between these locations. Should conditions different from those described in this report be encountered during project development, GLA should be consulted to review the conditions and determine whether our recommendations are still valid. Additional exploration, testing, and analysis may be required for such evaluation.

Should persons concerned with this project observe geotechnical features or conditions at the site or surrounding areas which are different from those described in this report, those observations should be reported immediately to GLA for evaluation.

It is important that the information in this report be made known to the design professionals involved with the project, that our recommendations be incorporated into project drawings and documents, and that the recommendations be carried out during construction by the contractor and subcontractors. It is not the responsibility of GLA to notify the design professionals and the project contractors and subcontractors.

The findings, conclusions, and recommendations in this report are applicable only to the specific project development on this specific site. These data should not be used for other projects, sites, or purposes unless they are reviewed by GLA or a qualified geotechnical professional.

Sincerely,

Geo-Logic Associates

Gregory George
CEG 2496

CERTIFIED ENGINEERING GEOLOGIST
GREGORY J. GEORGE
No. 2496
Exp. 12/31/20
STATE OF CALIFORNIA

Chalerm (Beeson) Liang
GE 2031

REGISTERED PROFESSIONAL ENGINEER
CHALERM S. LIANG
GE 2031
GEOTECHNICAL
STATE OF CALIFORNIA

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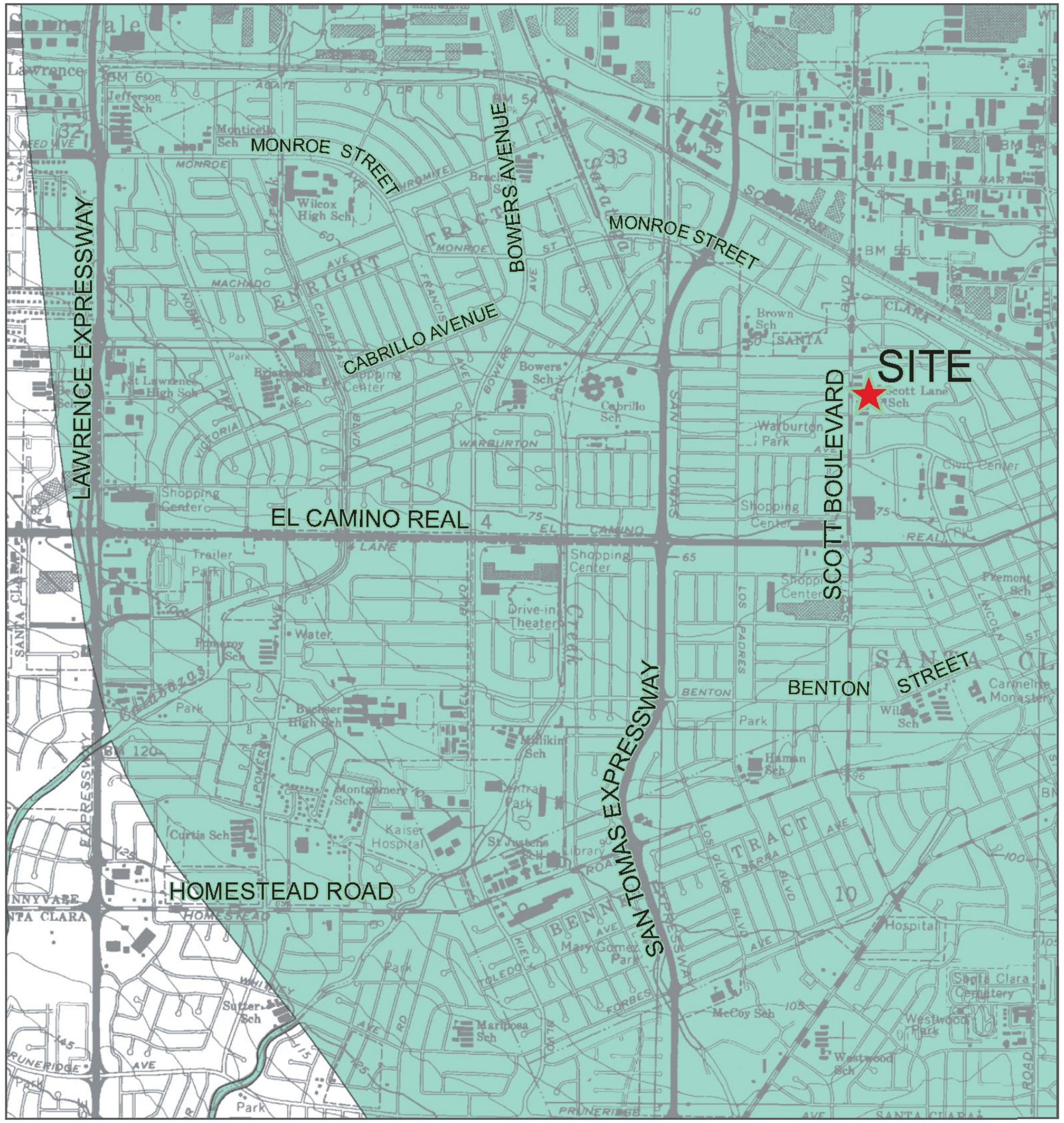
7.2 Aerial Photographs

Black and white unless indicated

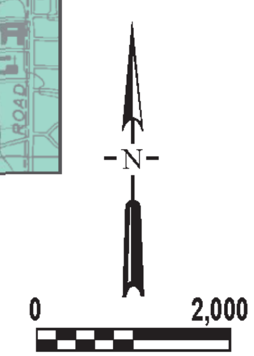
Date	Approx. Scale	Project	Source
6/13/93	N/A	BW	Google Earth
3/11/00	N/A	Color	Google Earth
10/30/02	N/A	Color	Google Earth
12/30/03	N/A	Color	Google Earth
03/20/15	N/A	Color	GoogleEarth
2/20/2018	N/A	Color	GoogleEarth
02/27/2022	N/A	Color	GoogleEarth

FIGURES



Base: After CGS (2002) Seismic Hazard Zone Map (San Jose West 7.5' quadrangle)

VICINITY MAP - no scale



EXPLANATION

State of California Zones of Required Investigation

Liquefaction

Areas where historic occurrence of liquefaction, or local geological , geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides

Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Seciton 2693(c) would be required.

Scott Lane Elementary School:

Latitude: 37.3586
Longitude: -121.9582

Geo-Logic ASSOCIATES

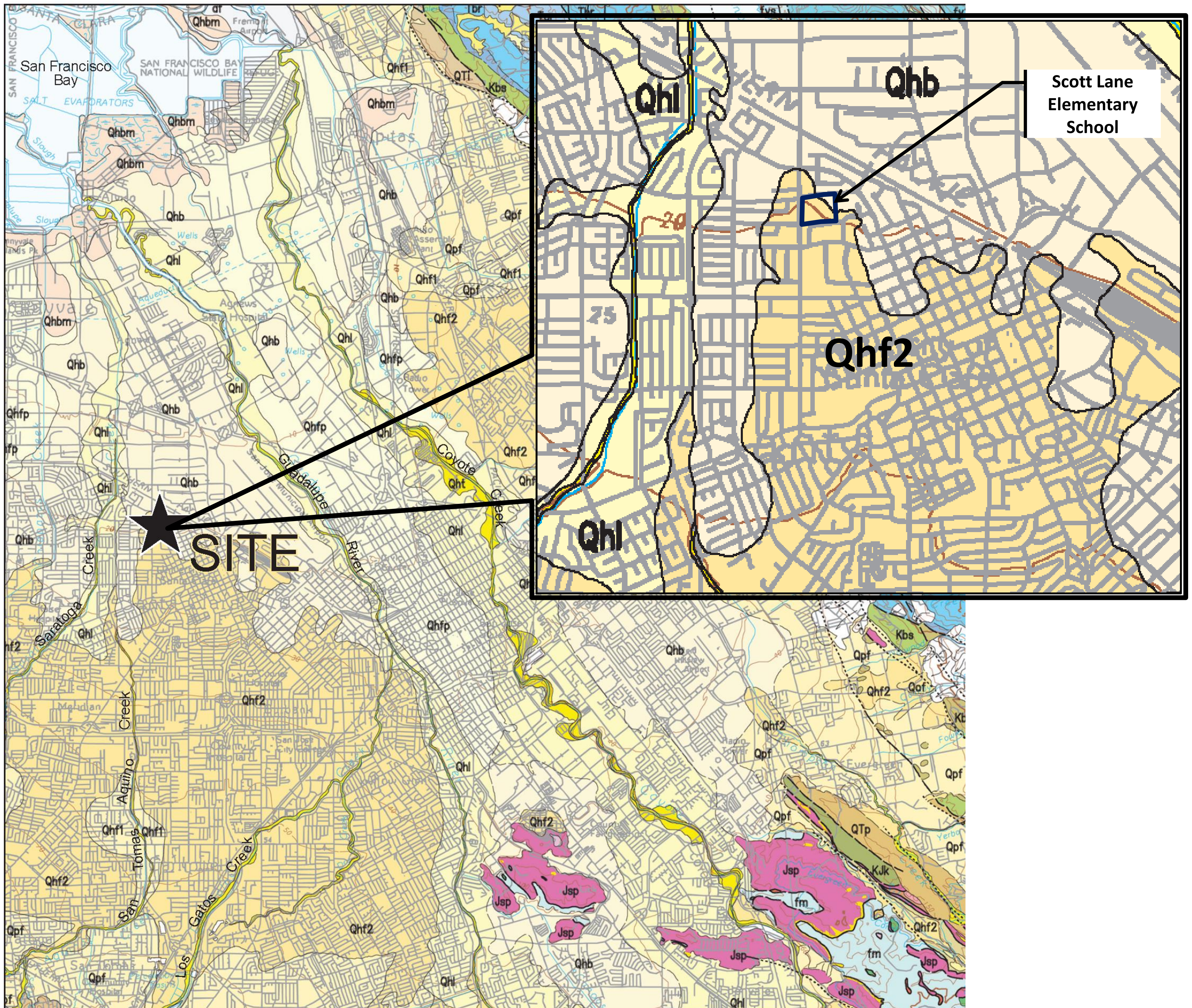
6300 San Ignacio Avenue, Suite A
San Jose, California 95119
Phone (408) 778-2818

Drafted By:	
Date:	September 2022
Checked By:	
Revision:	

SITE LOCATION AND SEISMIC HAZARD ZONE MAP
Scott Lane Elementary School
1925 Scott Boulevard
Santa Clara, California

FIGURE 1

PROJECT PA22.1033



EXPLANATION
Selected Units

TERTIARY and QUATERNARY ROCKS

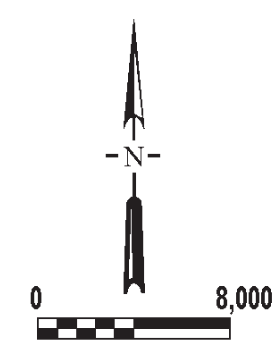
Qhb	Basin deposits
Qhf2	Alluvial fan deposits
Qh1	Levee deposits
Qpf,Qof	Pleistocene Alluvial fan deposits
QTp	Packwood gravels
Tsg	Silver Creek gravels

MESOZOIC ROCKS - SOUTHWEST of SANTA CLARA VALLEY

fm	Franciscan Complex-melange
fpv	Franciscan Complex-Permanente terrane metavolcanic rocks
Jsp	Serpentinite

MESOZOIC ROCKS - NORTHEAST of SANTA CLARA VALLEY

Kcu	Unnamed sandstone, mudstone conglomerate
fy2	Franciscan Complex-Yolla Bolly terrane metasandstone



Base: Modified from Wentworth and others (1999)

Geo-Logic ASSOCIATES

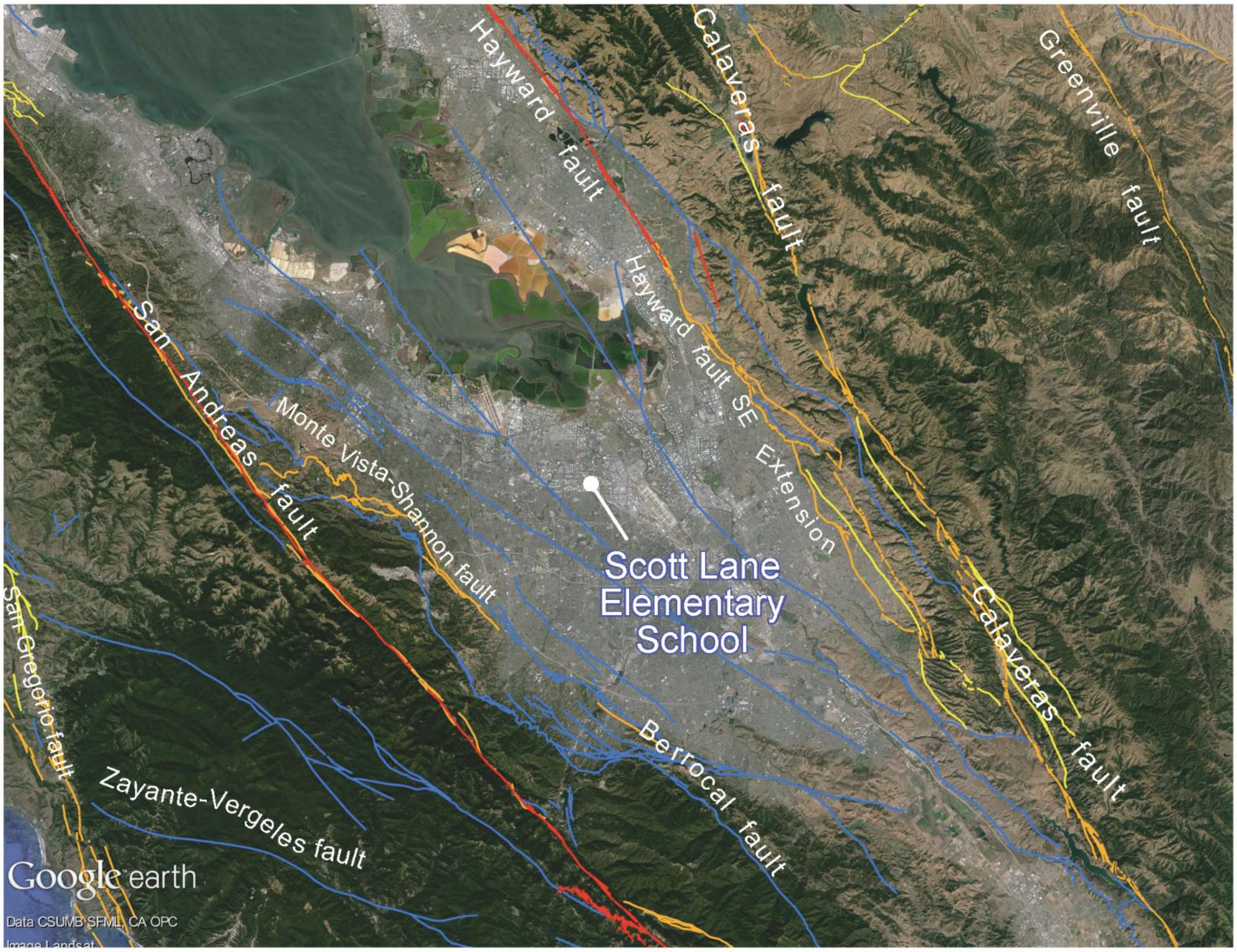
6300 San Ignacio Avenue,
Suite A
San Jose, California 95119
Phone (408) 778-2818

Drafted By:	
Date:	September 2022
Checked By:	
Revision:	

REGIONAL GEOLOGIC MAP
Scott Lane Elementary School
1925 Scott Boulevard
Santa Clara, California

FIGURE
2

PROJECT
PA22.1033

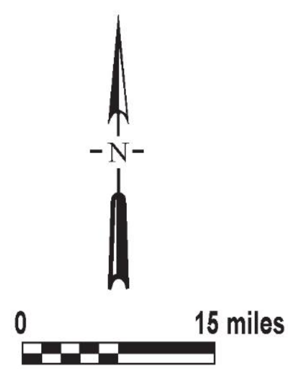


BASE: From USGS National Fault and Fold Database, .kmz files on GoogleEarth base imagery

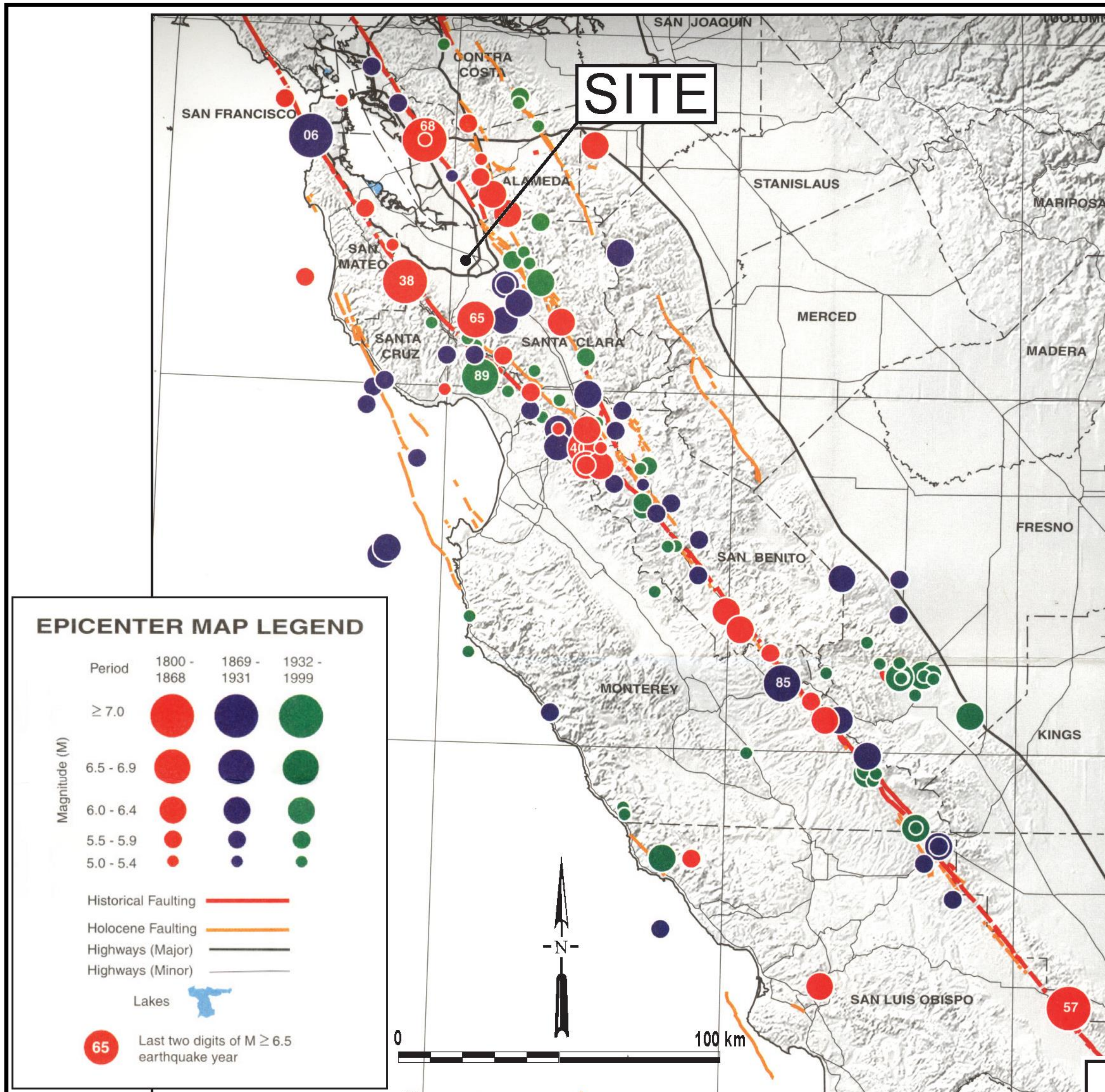
EXPLANATION

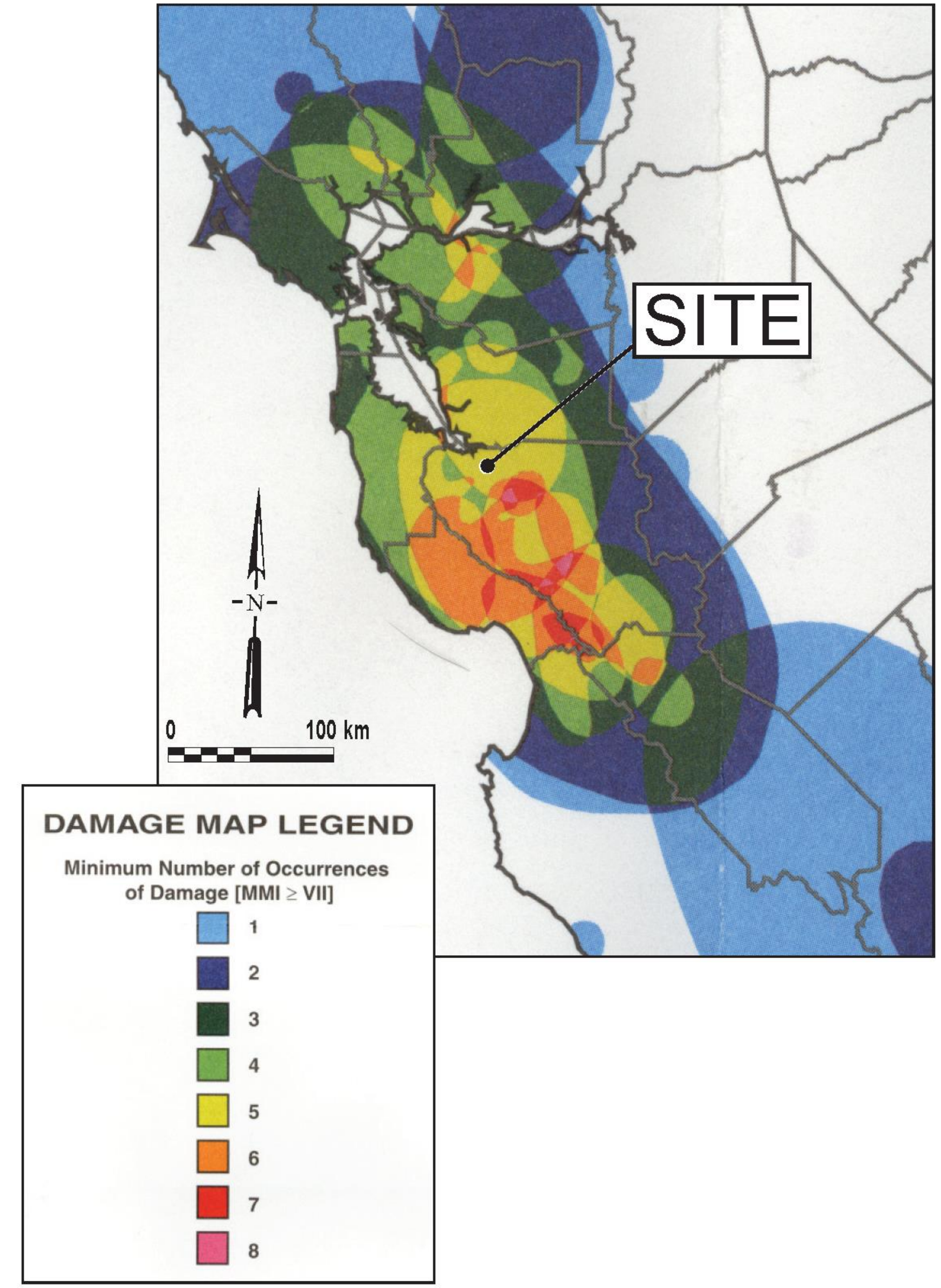
QUATERNARY ACTIVE FAULTS

- Historic
- Holocene-Latest
- Pleistocene
- Late Quaternary



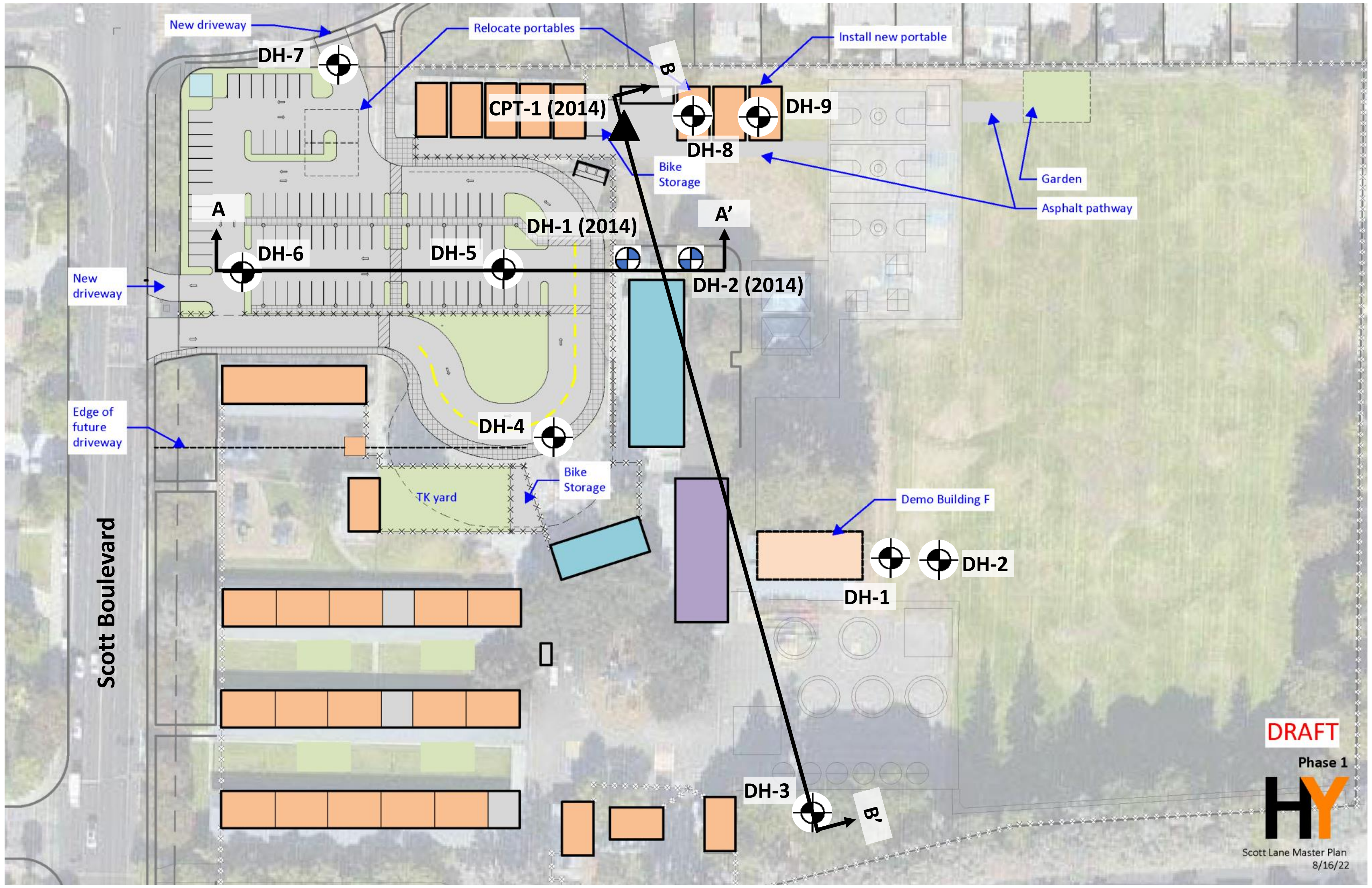
Geo-Logic ASSOCIATES	DATE SEPT 2022	**QUATERNARY ACTIVE FAULTS** SCOTT LANE ELEMENTARY SCHOOL 1925 Scott Boulevard Santa Clara, California	FIGURE 3
	PHASE 100		PROJECT PA22.1033

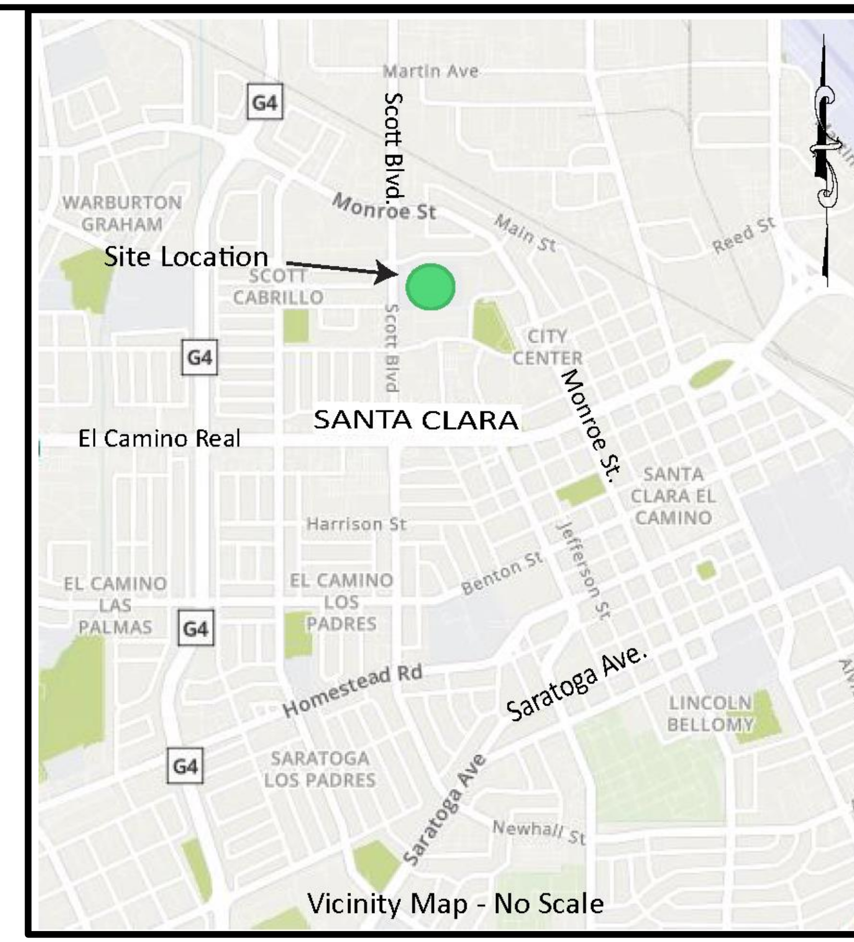




Base: California Geological Survey Map Sheet 49 (Toppozada and others, 2000)

Geo-Logic ASSOCIATES	6300 San Ignacio Avenue, Suite A San Jose, California 95119 Phone (408) 778-2818	Drafted By: Date: September 2022 Checked By: Revision:	**HISTORIC SEISMICITY MAP** **Scott Lane Elementary School** **1925 Scott Boulevard** **Santa Clara, California**	**FIGURE** 4 **PROJECT** PA22.1033





Legend

	DH-9	Exploratory drill hole (this study)
	(DH-2, 2014)	Exploratory drill hole (GLA, 2014, DH-1 and DH-2)
	(CPT-1, 2014)	Cone penetration test (GLA, 2014, CPT-1)
		Cross-section

Approximate Scale (feet)

0 100 200 300

Base: Draft Phase 1 Scott Lane Mater Plan drawing provided by Santa Clara Unified School District, dated 8/16/22.

Geo-Logic ASSOCIATES

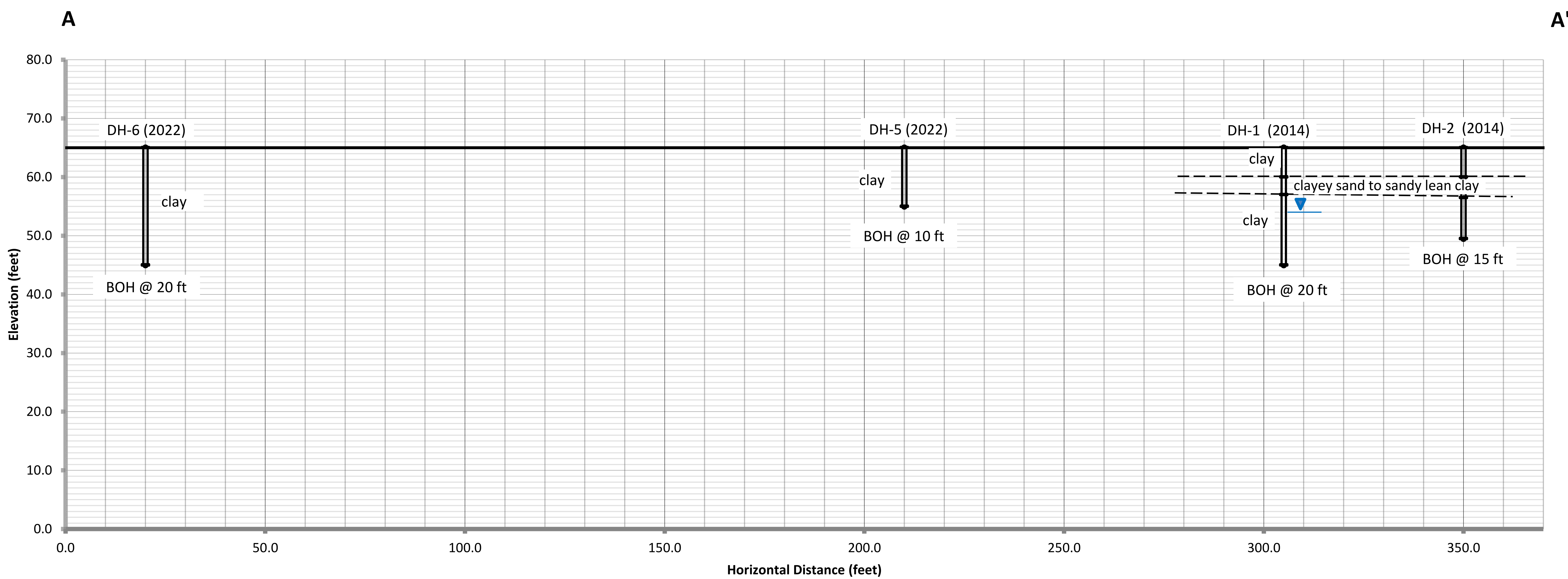
6300 San Ignacio Avenue, Suite A
San Jose, California 95119
Phone (408) 778-2818

Drafted By:	
Date:	September 2022
Checked By:	
Revision:	

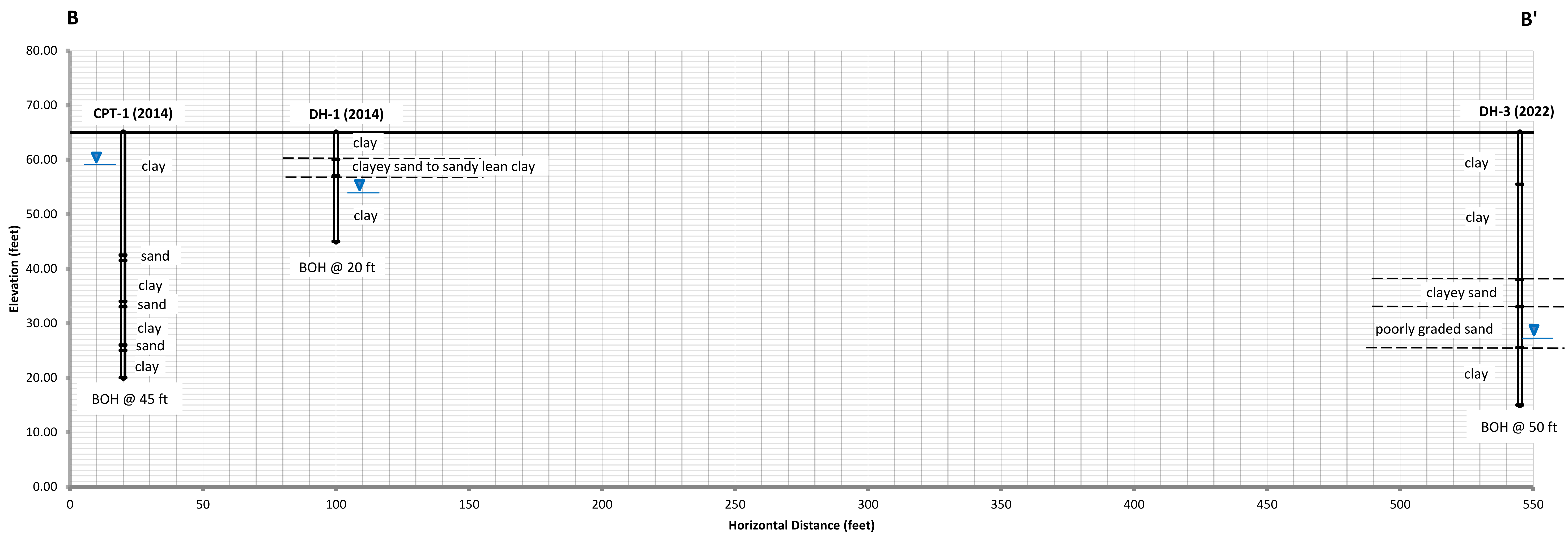
SITE PLAN
Scott Lane Elementary School
1925 Scott Boulevard
Santa Clara, California

FIGURE
5

PROJECT
PA22.1033



Geo-Logic ASSOCIATES	Drafted By:		**CROSS-SECTION A-A'**	**FIGURE**
	Date:	September 2022	Scott Lane Elementary School	6
	Checked By:		1925 Scott Boulevard	**PROJECT**
	Revision:		Santa Clara, California	PA22.1033



Geo-Logic Associates	Drafted By:		**CROSS-SECTION B-B'**	**FIGURE**
	Date:	September 2022	Scott Lane Elementary School	7
	Checked By:		1925 Scott Boulevard	**PROJECT**
	Revision:		Santa Clara, California	PA22.1033

APPENDIX A

SUBSURFACE INVESTIGATIONS

- **KEYS TO SOIL CLASSIFICATION (FINE AND COARSE GRAINED SOILS)**
- **LOG OF DRILL HOLES DH-1 THROUGH DH-9 (THIS STUDY)**
- **LOG OF DRILL HOLES DH-1 AND DH-2 (2014 STUDY)**
- **LOG OF CPT-1 (2014 STUDY)**

KEY TO SOIL CLASSIFICATION - FINE GRAINED SOILS

(50% OR MORE IS SMALLER THAN NO. 200 SIEVE SIZE)

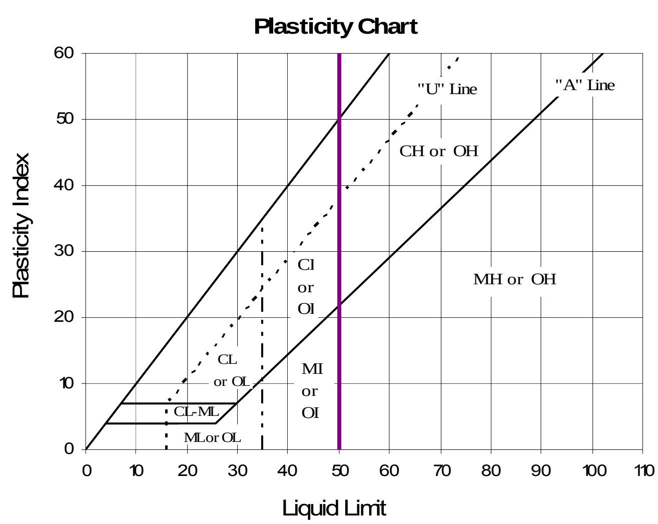
(modified from ASTM D2487 to include fine grained soils with intermediate plasticity)

MAJOR DIVISIONS			GROUP SYMBOLS	GROUP NAMES
SILTS AND CLAYS (Liquid Limit less than 35) Low Plasticity	Inorganic	PI < 4 or plots below “A” line	ML	Silt, Silt with Sand or Gravel, Sandy or Gravelly Silt, Sandy or Gravelly Silt with Sand or Gravel
	Inorganic	PI > 7 or plots on or above “A” line	CL	Lean Clay, Lean Clay with Sand or Gravel, Sandy or Gravelly Lean Clay, Sandy or Gravelly Lean Clay with Sand or Gravel
	Inorganic	PI between 4 and 7	CL-ML	Silty Clay, Silty Clay with Sand or Gravel, Sandy or Gravelly Silty Clay, Sandy or Gravelly Silty Clay with Sand or Gravel
	Organic	See footnote 3	OL	Organic Silt (below “A” Line) or Organic Clay (on or above “A” Line) (1,2)
SILTS AND CLAYS (35 ≤ Liquid Limit < 50) Intermediate Plasticity	Inorganic	PI < 4 or plots below “A” line	MI	Silt, Silt with Sand or Gravel, Sandy or Gravelly Silt, Sandy or Gravelly Silt with Sand or Gravel
	Inorganic	PI > 7 or plots on or above “A” line	CI	Clay, Clay with Sand or Gravel, Sandy or Gravelly Clay, Sandy or Gravelly Clay with Sand or Gravel
	Organic	See footnote 3	OI	Organic Silt (below “A” Line) or Organic Clay (on or above “A” Line) (1,2)
SILTS AND CLAYS (Liquid Limit 50 or greater) High Plasticity	Inorganic	PI plots below “A” line	MH	Elastic Silt, Elastic Silt with Sand or Gravel, Sandy or Gravelly Elastic Silt, Sandy or Gravelly Elastic Silt with Sand or Gravel
	Inorganic	PI plots on or above “A” line	CH	Fat Clay, Fat Clay with Sand or Gravel, Sandy or Gravelly Fat Clay, Sandy or Gravelly Fat Clay with Sand or Gravel
	Organic	See note 3 below	OH	Organic Silt (below “A” Line) or Organic Clay (on or above “A” Line) (1,2)

1. If soil contains 15% to 29% plus No. 200 material, include “with sand” or “with gravel” to group name, whichever is predominant.
2. If soil contains ≥30% plus No. 200 material, include “sandy” or “gravelly” to group name, whichever is predominant. If soil contains ≥15% of sand or gravel sized material, add “with sand” or “with gravel” to group name.
3. Ratio of liquid limit of oven dried sample to liquid limit of not dried sample is less than 0.75.

CONSISTENCY	UNCONFINED SHEAR STRENGTH (KSF)	STANDARD PENETRATION (BLOWS/FOOT)
VERY SOFT	< 0.25	< 2
SOFT	0.25 – 0.5	2 – 4
FIRM	0.5 – 1.0	5 – 8
STIFF	1.0 – 2.0	9 – 15
VERY STIFF	2.0 – 4.0	16 – 30
HARD	> 4.0	> 30

MOISTURE	CRITERIA
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp, but no visible water
Wet	Visible free water, usually soil is below the water table



GEO-LOGIC ASSOCIATES

KEY TO SOIL CLASSIFICATION – COARSE GRAINED SOILS

(MORE THAN 50% IS LARGER THAN NO. 200 SIEVE SIZE)

(modified from ASTM D2487 to include fines with intermediate plasticity)

MAJOR DIVISIONS			GROUP SYMBOLS	GROUP NAMES[1]
GRAVELS (more than 50% of coarse fraction is larger than No. 4 sieve size)	Gravels with less than 5% fines	Cu ≥ 4 and 1 ≤ Cc ≤ 3	GW	Well Graded Gravel, Well Graded Gravel with Sand
		Cu < 4 and/or 1 > Cc > 3	GP	Poorly Graded Gravel, Poorly Graded Gravel with Sand
	Gravels with 5% to 12% fines	ML, MI or MH fines	GW-GM	Well Graded Gravel with Silt, Well Graded Gravel with Silt and Sand
			GP-GM	Poorly Graded Gravel with Silt, Poorly Graded Gravel with Silt and Sand
		CL, CI or CH fines	GW-GC	Well Graded Gravel with Clay, Well Graded Gravel with Clay and Sand
			GP-GC	Poorly Graded Gravel with Clay, Poorly Graded Gravel with Clay and Sand
	Gravels with more than 12% fines	ML, MI or MH fines	GM	Silty Gravel, Silty Gravel with Sand
		CL, CI or CH fines	GC	Clayey Gravel, Clayey Gravel with Sand
		CL-ML fines	GC-GM	Silty Clayey Gravel; Silty, Clayey Gravel with Sand
SANDS (50% or more of coarse fraction is smaller than No. 4 sieve size)	Sands with less than 5% fines	Cu ≥ 6 and 1 ≤ Cc ≤ 3	SW	Well Graded Sand, Well Graded Sand with Gravel
		Cu < 6 and/or 1 > Cc > 3	SP	Poorly Graded Sand, Poorly Graded Sand with Gravel
	Sands with 5% to 12% fines	ML, MI or MH fines	SW-SM	Well Graded Sand with Silt, Well Graded Sand with Silt and Gravel
			SP-SM	Poorly Graded Sand with Silt, Poorly Graded Sand with Silt and Gravel
		CL, CI or CH fines	SW-SC	Well Graded Sand with Clay, Well Graded Sand with Clay and Gravel
			SP-SC	Poorly Graded Sand with Clay, Poorly Graded Sand with Clay and Gravel
	Sands with more than 12% fines	ML, MI or MH fines	SM	Silty Sand, Silty Sand with Gravel
		CL, CI or CH fines	SC	Clayey Sand, Clayey Sand with Gravel
		CL-ML fines	SC-SM	Silty, Clayey Sand; Silty, Clayey Sand with Gravel

US STANDARD SIEVES 3 Inch ¾ Inch No. 4 No. 10 No. 40 No. 200

	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES & BOULDERS	GRAVELS		SANDS			SILTS AND CLAYS

RELATIVE DENSITY (SANDS AND GRAVELS)	STANDARD PENETRATION (BLOWS/FOOT)
Very Loose	0 - 4
Loose	5 – 10
Medium Dense	11 – 30
Dense	31 - 50
Very Dense	50+

1. Add “with sand” to group name if material contains 15% or greater of sand-sized particle. Add “with gravel” to group name if material contains 15% or greater of gravel-sized particle.

MOISTURE	CRITERIA
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp, but no visible water
Wet	Visible free water, usually soi is below the water table

GEO-LOGIC ASSOCIATES

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 1

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), dry, very stiff to hard	CL											
		1	S									
		2	D D	15				11		85		
		3										
brown (10YR 5/3), moist		4	S D D	15	2.5 4.25			21		101		
		5										
		6										
		7										
		8										
dark brown (10YR 3/3), stiff to very stiff		9	S D D	7	2.75 1.5							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 2

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), moist, very stiff to hard	CL											
		1	S									
		2	D	17	4.5							
			D		4.5		35	10	15	105		
		3										
		4	S									
pale brown (10YR 6/3)			D	15	4.5							
		5	D		4.5							
		6										
		7										
		8										
		9	S									
dark yellowish brown (10YR 4/3), stiff			D	9				19		81		
		10	D		1.0							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 3

PROJECT NAME:	Scott Lane Elementary School	**PROJECT NUMBER:**	PA22.1033
DRILL RIG:	Mobile B-53R, auto hammer	**LOGGED BY:**	FS
HOLE DIAMETER:	8-inch hollow stem auger	**HOLE ELEVATION:**	---
SAMPLER:	D = 3" OD, 2½" ID Split-spoon X = 2½" OD, 2" ID Split-spoon I = Standard Penetrometer (2" OD SPT) S = Slough in sample	**GROUND WATER DEPTH:**	**Initial:** 20 ft **Final:** 37.2 ft

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Dark gray (10YR 4/1), dry, very stiff	CL											
		1	S									
		2	D	24	4.0							
			D		4.0	25		10		100		
		3	S									
brown (10YR 5/3), moist		4	D	24	3.0							
			D		4.5+							
		5										
		6										
		7										
		8										
		9	S									
			D	10	4.5+							
FAT CLAY: Black (10YR 2/1), moist, very stiff to hard	CH		D		4.5+							
		10										
		11										
		12										
		13										
		14	S									
firm to stiff			D	10	0.75			36		86		
		15	D		0.25							
		16										
		17										
		18										
		19	S									
yellowish brown (10YR 5/4), wet			D	13	0.25							
		20	D		1.25			26		101		

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 3

PROJECT NAME:	Scott Lane Elementary School	**PROJECT NUMBER:**	PA22.1033
DRILL RIG:	Mobile B-53R, auto hammer	**LOGGED BY:**	FS
HOLE DIAMETER:	8-inch hollow stem auger	**HOLE ELEVATION:**	---
SAMPLER:	D = 3" OD, 2½" ID Split-spoon X = 2½" OD, 2" ID Split-spoon I = Standard Penetrometer (2" OD SPT) S = Slough in sample	**GROUND WATER DEPTH:**	**Initial:** 20 ft **Final:** 37.2 ft

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
FAT CLAY (continued)	CH											
		21										
		22										
		23										
		24	S D D	14	0.5 0.5		50	28	34	98		
		25										
		26										
CLAYEY SAND: Dark grayish brown (10YR4/2), wet, medium dense to dense; mostly fine to medium sand	SC	27										
		28										
		29	S D D	33		23		21		106		
		30										
		31										
POORLY GRADED SAND: Dark grayish brown (10yr 4/2), wet, dense to very dense; mostly fine to medium sand	SP	32										
		33										
		34	S D D	65		5		19		111		
		35										
		36										
		37										
		38										
		39	S D D	6	0.25							
CLAY: Dark greenish gray (5G 4/1), moist, firm	CI	40										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 3
PROJECT NAME: Scott Lane Elementary School	PROJECT NUMBER: PA22.1033	
DRILL RIG: Mobile B-53R, auto hammer	LOGGED BY: FS	
HOLE DIAMETER: 8-inch hollow stem auger	HOLE ELEVATION: ---	
SAMPLER: D = 3" OD, 2½" ID Split-spoon; X = 2½" OD, 2" ID Split-spoon; I = Standard Penetrometer (2" OD SPT); S = Slough in sample	GROUND WATER DEPTH: Initial: 20 ft; Final: 37.2 ft	

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
CLAY (continued)	CI											
		41										
		42										
		43										
firm to stiff		44	S D D	15	1.25 0.25		37	23	18	102		
		45										
		46										
		47										
		48										
firm		49	S D D	17	0.5 0.5			26		101		
BOTTOM OF HOLE = 50 Feet		50										
		51										
		52										
		53										
		54										
		55										
		56										
		57										
		58										
		59										
		60										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 4

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±4" AC over ±7" AB)												
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), moist, very stiff to hard	CL	1										
		2	S D D	23	4.5			11		114		
		3										
pale brown (10YR 6/3)		4	S D D	20	4.5			13		106		
		5										
		6										
		7										
		8										
dark yellowish bown (10YR 3/4), firm to stiff		9	S D D	8	1.25 0.5							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 5

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±4" AC over ±7" AB)												
ALLUVIUM, LEAN CLAY: Dark grayish brown (10YR 4/2), moist, stiff to very stiff	CL	1	S									
		2	D D	15	4.5 3.0							
		3										
		4	S D	20	3.0							
		5	D		1.25			24		103		
		6										
		7										
		8										
very dark grayish brown (10YR 3/2), soft		9	S D	4	0.25							
		10	D		0.25							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 6

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R, auto hammer **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±4" AC over ±7" AB)												
ALLUVIUM, LEAN CLAY: Very dark grayish brown (10YR 5/4), moist, stiff to very stiff	CL	1	S									
		2	D D	20	3.25			8		108		
		3										
yellowish brown (10YR 5/4)		4	S D	16	4.25							
		5	D		4.0			20		108		
		6										
		7										
		8										
dark yellowish brown (10YR 4/6), firm to stiff		9	S D	9	0.5							
		10	D		2.0							
FAT CLAY: Very dark grayish brown (10YR 3/2), moist, stiff	CH	11										
		12										
		13										
		14	S D	12	1.0							
		15	D		1.0							
		16										
		17										
		18										
wet		19	S D	9	1.25							
BOTTOM OF HOLE = 20 feet No groundwater encountered		20	D		1.25							

GEO-LOGIC ASSOCIATES

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 7

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Very dark grayish brown (10YR 3/2), moist, stiff to very stiff	CL											
		1	S									
		2	D D	13	1.75 2.5			37		68		
		3										
		4	S									
dark grayish brown (10YR 4/6), firm to stiff		5	D D	10	0.5 0.75			28		94		
		6										
		7										
		8										
black (10YR 2/1), stiff		9	S D D	13	1.0 1.0							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 8

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), dry to moist, very stiff to hard	CL											
		1	S									
		2	D	27	4..5+							
			D		4..5+			14		99		
		3										
		4	S									
light brown gray (10YR 6/2)			D	25	4..5+							
			D		4..5+			21		94		
		5										
		6										
		7										
		8										
		9	S									
dark grayish brown (10YR 4/2), firm			D	11	0.75							
			D		0.25							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 8/9/2022	LOG OF EXPLORATORY DRILL HOLE	DH- 9

PROJECT NAME: Scott Lane Elementary School **PROJECT NUMBER:** PA22.1033

DRILL RIG: Mobile B-53R **LOGGED BY:** FS

HOLE DIAMETER: 8-inch hollow stem auger **HOLE ELEVATION:** ---

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: Initial: --- Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM, LEAN CLAY: Black (10YR 2/1), dry to moist, very stiff to hard	CL											
		1	S									
		2	D	21	4..5+							
			D		4..5+			13		88		
		3										
		4	S									
yellowish brown (10YR 5/4), moist, stiff to very stiff			D	22	2.0							
		5	D		4.5							
		6										
		7										
		8										
		9	S									
very dark grayish brown (10YR 3/2), soft to firm			D	7	0.25			36		84		
		10	D		0.25							
BOTTOM OF HOLE = 10 Feet No groundwater encountered		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 4/19/2014	**LOG OF EXPLORATORY DRILL HOLE**	**DH- 1**

PROJECT NAME: Scott Lane Elementary School Portable **PROJECT NUMBER:** 2014.0069

DRILL RIG: Mobile B53 140# hammer w rods & wire winch **LOGGED BY:** BT

HOLE DIAMETER: 8" Hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** 11 ft **Final:** ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM: CLAY: Grayish brown (2.5Y 5/2), dry to moist, hard; minor rootlets	CI	1										
		2	S D D	22	4.5+			10		114		
SANDY LEAN CLAY with GRAVEL: Olive brown (2.5Y 4/4), moist, hard; with fine to coarse sand and gravel	CL	3	S D D	12	4.5	61		20		102		
		4										
CLAYEY SAND to SANDY LEAN CLAY: olive brown (2.5Y 4/4), moist, medium dense sand to stiff clay	SC/ CL	5										
		6	S D D	10	2.0							
		7										
CLAY: Olive brown (2.5Y 4/4), moist, firm	CI	8										
		9	S D D	9	1.0			33		86		
		10										
		11										
		12										
		13										
		14										
dark gray (2.5Y 4/1), stiff		15	S D D	14	2.25							
		16										
		17										
		18										
		19	S D D	34								
BOTTOM OF HOLE = 20 Feet		20										

DATE: 4/19/2014	**LOG OF EXPLORATORY DRILL HOLE**	**DH- 2**

PROJECT NAME: Scott Lane Elementary School Portable **PROJECT NUMBER:** 2014.0069

DRILL RIG: Mobile B53 140# hammer w rods & wire winch **LOGGED BY:** BT

HOLE DIAMETER: 8" Hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** NA **Final:** NA

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
ALLUVIUM: CLAY: Very dark gray (2.5Y 3/1) moist, hard; minor rootlets	CH	1	S									
		2	D D	18	4.5+			12		105		
SANDY LEAN CLAY: Olive brown (2.5Y 4/4) moist, hard; with fine to coarse sand	CL	3	S D	17								
		4	D		4.5+		25		9			
CLAYEY SAND to SANDY LEAN CLAY: olive brown (2.5Y 4/4), moist, medium dense sand to stiff clay	SC/ CL	5	S									
		6	D D	11		49		19		101		
		7										
		8	S									
CLAY: Dark olive brown (2.5Y 3/3) moist, firm; with minor rootlets	CI	9	D D	8	<1							
		10										
		11										
		12										
		13										
		14	S									
very dark gray (2.5Y 3/1), firm to stiff		15	D D	11	1.5							
BOTTOM OF HOLE = 15.5 Feet No groundwater encountered		16										
		17										
		18										
		19										
		20										

PROJECT: SCOTT CREEK ELEMENTARY SCHOOL
LOCATION: Santa Clara CA
PROJ. NO.: 2014.0069(PGE-29)
Terminated at 45.0 feet

CPT NO.: CPT-1
DATE: 04-19-2014
TIME: 13:53:00
Groundwater measureddd at 6.0 feet

PACIFIC GEOTECHNICAL
cpts by John Sarmiento & Associates

DEPTH (feet)	Qc (tsf)	Qc' (tsf)	Fs (tsf)	Rf (%)	SPT (N)	SPT' (N')	EffVtStr (ksf)	PHI (deg.)	SU (ksf)	SOIL BEHAVIOR TYPE	DENSITY RANGE (pcf)
0.53	41.6	66.59	0.83	2.0	17	27	0.06	----	5.55	Sandy SILT to Clayey SILT	130-140
1.06	48.5	77.6	1.61	3.3	24	39	0.13	----	6.46	Clayey SILT to Silty CLAY	"
1.52	52.4	83.82	0.97	1.9	17	28	0.20	37	----	Silty SAND to Sandy SILT	"
2.05	31.2	49.98	0.71	2.3	12	20	0.26	----	4.15	Sandy SILT to Clayey SILT	120-130
2.56	59.7	95.55	1.33	2.2	24	38	0.33	----	7.94	"	130-140
3.01	86.9	139.02	1.38	1.6	29	46	0.39	40	----	Silty SAND to Sandy SILT	"
3.53	77.1	123.39	1.06	1.4	26	41	0.46	39	----	"	120-130
4.05	66.7	106.72	1.20	1.8	22	36	0.53	38	----	"	130-140
4.50	26.9	43.02	1.52	5.6	27	43	0.59	----	3.55	CLAY	"
5.02	21.1	33.76	1.29	6.1	21	34	0.66	----	2.77	"	"
5.50	19.4	31.10	1.09	5.6	19	31	0.72	----	2.54	"	"
6.03	16.1	25.76	0.97	6.0	16	26	0.76	----	2.09	"	120-130
6.56	18.1	29.01	0.55	3.0	9	15	0.79	----	2.36	Clayey SILT to Silty CLAY	"
7.01	9.0	14.23	0.52	5.8	9	14	0.81	----	1.70	CLAY	110-120
7.55	6.6	10.32	0.33	5.0	7	10	0.84	----	1.23	"	"
8.01	6.6	10.09	0.37	5.7	7	10	0.86	----	1.21	"	"
8.53	17.5	26.44	0.24	1.4	7	11	0.89	----	2.27	Sandy SILT to Clayey SILT	"
9.06	5.8	8.60	0.29	5.0	6	9	0.91	----	1.04	CLAY	100-110
9.52	4.7	6.93	0.22	4.6	5	7	0.93	----	0.83	"	"
10.07	5.9	8.51	0.36	6.1	6	9	0.96	----	1.06	"	"
10.54	6.1	8.68	0.31	5.2	6	9	0.98	----	1.09	"	"
11.00	8.0	11.25	0.43	5.3	8	11	1.00	----	1.47	"	110-120
11.56	9.7	13.37	0.49	5.0	9	13	1.03	----	1.49	"	"
12.02	9.8	13.47	0.60	6.1	10	14	1.06	----	1.52	"	120-130
12.57	10.0	13.45	0.58	5.8	10	14	1.09	----	1.53	"	"
13.04	11.0	14.64	0.66	6.0	11	15	1.12	----	1.69	"	"
13.58	10.7	14.14	0.66	6.2	11	14	1.16	----	1.65	"	"
14.04	10.2	13.22	0.56	5.5	10	13	1.19	----	1.55	"	"
14.57	11.1	14.26	0.61	5.5	11	14	1.22	----	1.70	"	"
15.03	10.9	13.88	0.54	4.9	11	14	1.25	----	1.67	"	"
15.56	8.2	10.35	0.49	6.0	8	10	1.28	----	1.46	"	110-120
16.03	9.8	12.22	0.41	4.2	9	12	1.30	----	1.47	"	"
16.57	10.5	12.87	0.46	4.4	10	12	1.33	----	1.57	"	"
17.03	12.0	14.63	0.52	4.3	12	14	1.36	----	1.46	"	120-130
17.57	15.9	19.08	0.63	4.0	10	12	1.39	----	1.97	Silty CLAY to CLAY	"
18.03	15.5	18.35	0.59	3.8	10	12	1.42	----	1.91	"	"
18.50	17.8	20.86	0.74	4.2	12	14	1.45	----	2.22	"	"
19.00	22.1	25.54	1.15	5.2	22	25	1.49	----	2.79	CLAY	130-140
19.50	20.3	23.12	1.03	5.1	20	23	1.52	----	2.54	"	"
20.07	20.4	22.95	0.98	4.8	20	23	1.56	----	2.55	"	"
20.58	14.6	16.26	0.70	4.8	14	16	1.60	----	1.77	"	120-130
21.08	11.3	12.53	0.29	2.6	5	6	1.62	----	1.67	Clayey SILT to Silty CLAY	110-120
21.53	15.4	16.92	0.45	2.9	7	8	1.65	----	1.88	"	120-130
22.02	18.0	19.54	0.79	4.4	17	19	1.68	----	2.22	CLAY	"
22.53	23.6	25.25	0.92	3.9	15	17	1.72	----	2.96	Silty CLAY to CLAY	130-140
23.03	51.6	54.64	0.53	1.0	17	18	1.75	35	----	Silty SAND to Sandy SILT	120-130
23.54	45.6	47.96	0.70	1.5	15	16	1.78	34	----	"	"
24.04	21.9	22.90	0.99	4.5	22	23	1.82	----	2.73	CLAY	130-140
24.55	28.3	29.30	0.76	2.7	14	15	1.86	----	3.57	Clayey SILT to Silty CLAY	"
25.03	9.5	9.78	0.44	4.6	9	10	1.88	----	1.33	CLAY	110-120
25.55	8.1	8.28	0.29	3.5	8	8	1.90	----	1.30	"	100-110
26.06	8.9	9.08	0.26	2.9	6	6	1.92	----	1.46	Silty CLAY to CLAY	"
26.57	9.2	9.34	0.30	3.3	6	6	1.95	----	1.27	"	110-120
27.08	8.7	8.72	0.29	3.3	6	6	1.98	----	1.40	"	"

PROJECT: SCOTT CREEK ELEMENTARY SCHOOL
LOCATION: Santa Clara CA
PROJ. NO.: 2014.0069(PGE-29)
Terminated at 45.0 feet

CPT NO.: CPT-1
DATE: 04-19-2014
TIME: 13:53:00
Groundwater measureddd at 6.0 feet

PACIFIC GEOTECHNICAL
cpts by John Sarmiento & Associates

DEPTH (feet)	Qc (tsf)	Qc' (tsf)	Fs (tsf)	Rf (%)	SPT (N)	SPT' (N')	EffVtStr (ksf)	PHI (deg.)	SU (ksf)	SOIL BEHAVIOR TYPE	DENSITY RANGE (pcf)
27.50	9.6	9.61	0.38	4.0	10	10	2.00	----	1.32	CLAY	110-120
28.07	71.4	71.37	1.96	2.7	29	29	2.04	----	9.29	Sandy SILT to Clayey SILT	130-140
28.57	26.2	26.18	0.96	3.7	13	13	2.08	----	3.26	Clayey SILT to Silty CLAY	"
29.08	49.3	49.23	0.69	1.4	17	17	2.11	34	----	Silty SAND to Sandy SILT	120-130
29.50	30.4	30.33	0.61	2.0	12	12	2.14	----	3.81	Sandy SILT to Clayey SILT	"
30.01	22.1	22.03	0.51	2.3	9	9	2.17	----	2.70	"	"
30.51	16.6	16.49	0.29	1.8	7	7	2.19	----	1.96	"	110-120
31.02	14.1	14.04	0.68	4.8	14	14	2.23	----	1.63	CLAY	120-130
31.57	43.7	43.47	0.64	1.5	15	15	2.26	33	----	Silty SAND to Sandy SILT	"
32.08	38.5	38.27	0.56	1.5	13	13	2.29	32	----	"	"
32.50	11.2	11.11	0.49	4.4	11	11	2.32	----	1.53	CLAY	"
33.01	9.8	9.73	0.21	2.1	5	5	2.34	----	1.30	Clayey SILT to Silty CLAY	100-110
33.52	8.4	8.35	0.20	2.4	6	6	2.36	----	1.27	Silty CLAY to CLAY	"
34.02	8.2	8.16	0.14	1.7	4	4	2.38	----	1.23	Clayey SILT to Silty CLAY	"
34.52	8.4	8.36	0.12	1.4	4	4	2.40	----	1.26	"	90-100
35.03	11.0	10.89	0.19	1.8	6	6	2.42	----	1.47	"	100-110
35.54	13.5	13.38	0.31	2.3	7	7	2.45	----	1.51	"	110-120
36.05	10.9	10.83	0.26	2.4	6	6	2.48	----	1.46	"	"
36.56	11.0	10.90	0.33	3.0	7	7	2.50	----	1.47	Silty CLAY to CLAY	"
37.07	11.1	10.86	0.27	2.4	6	5	2.53	----	1.47	Clayey SILT to Silty CLAY	"
37.57	10.8	10.52	0.21	1.9	5	5	2.55	----	1.42	"	100-110
38.04	11.2	10.86	0.22	1.9	6	6	2.57	----	1.49	"	"
38.52	12.5	12.00	0.31	2.5	6	6	2.60	----	1.36	"	110-120
39.05	24.4	23.09	0.76	3.1	12	12	2.63	----	2.94	"	130-140
39.57	48.1	44.93	0.92	1.9	16	15	2.67	33	----	Silty SAND to Sandy SILT	"
40.03	68.4	63.21	0.77	1.1	17	16	2.70	35	----	SAND to Silty SAND	120-130
40.53	19.0	17.38	0.59	3.1	10	9	2.73	----	2.21	Clayey SILT to Silty CLAY	"
41.04	14.5	13.13	0.56	3.9	10	9	2.76	----	1.61	Silty CLAY to CLAY	"
41.54	11.8	10.58	0.32	2.7	6	5	2.79	----	1.55	Clayey SILT to Silty CLAY	110-120
42.05	11.2	9.94	0.30	2.7	6	5	2.82	----	1.45	"	"
42.56	12.0	10.52	0.33	2.7	6	5	2.84	----	1.26	"	"
43.07	11.4	9.91	0.28	2.4	6	5	2.87	----	1.47	"	"
43.59	11.7	10.02	0.27	2.3	6	5	2.90	----	1.51	"	"
44.08	12.0	10.24	0.33	2.8	6	5	2.92	----	1.25	"	"
44.58	11.4	9.59	0.24	2.1	6	5	2.95	----	1.45	"	100-110
45.08	18.5	15.41	0.31	1.7	7	6	2.97	----	2.10	Sandy SILT to Clayey SILT	110-120

DEPTH = Sampling interval (~0.1 feet)
Qc = Tip bearing uncorrected   Qt = Tip bearing corrected   Fs = Sleeve friction resistance   Rf = Qt / Fs
SPT = Equivalent Standard Penetration Test   Qt' and SPT' = Qt and SPT corrected for overburden
EffVtStr = Effective Vertical Stress using est. density**   Phi = Soil friction angle*
Su = Undrained Soil Strength* (see classification chart)
References: * Robertson and Campanella, 1988   **Olsen, 1989   *** Durgunoglu & Mitchell, 1975

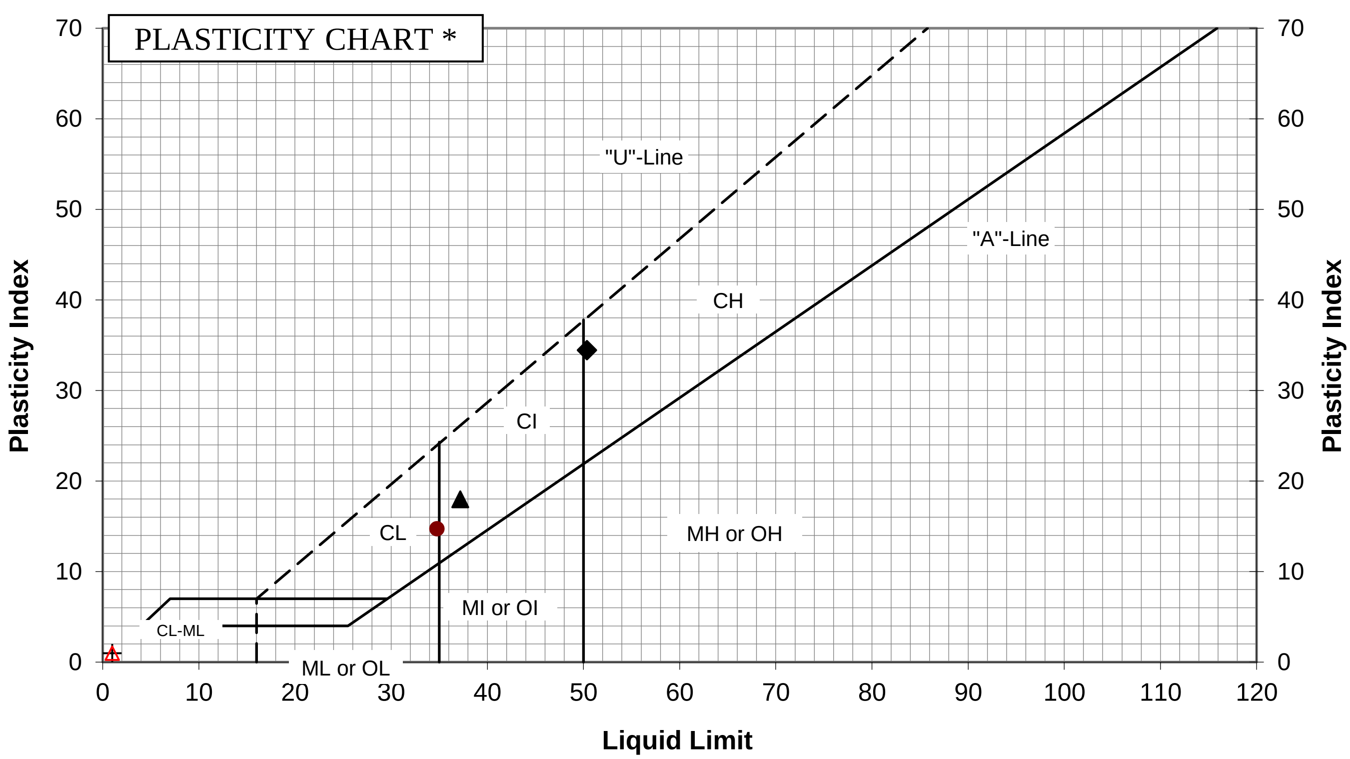
APPENDIX B

LABORATORY TEST DATA

- **LABORATORY TEST DATA FROM THIS STUDY**
- **LABORATORY TEST DATA FROM OUR 2014 INVESTIGATION**

ATTERBERG LIMITS TEST RESULTS

PROJECT NAME	Scott Lane Elementary School			**PROJECT No.**	PA22.1033
DATE OF TEST	8/17/2022	8/17/2022	8/17/2022		
KEY SYMBOL	●	♦	▲		
DRILL HOLE No.	2	3	3		
DEPTH (ft)	2-2.5	24.5-25	44-44.5		
NATURAL WATER CONTENT (%)	8	8	11		
% Retained No. 40 SIEVE (Est.)	--	--	--		
% PASSING No. 200 SIEVE	--	--	--		
LIQUID LIMIT	35	50	37		
PLASTIC LIMIT	20	16	19		
PLASTICITY INDEX	15	34	18		
CLASSIFICATION SYMBOL	CL	CH	CI		



* Based on the Unified Soil Classification System modified to incorporate the "intermediate" classifications CI, MI, and OI for soils with liquid limits between 35 and 50. In the unmodified Unified Soil Classification System, such soils would be classified as CL, ML and OL, respectively.

GEO-LOGIC ASSOCIATES | **Figure B-1**

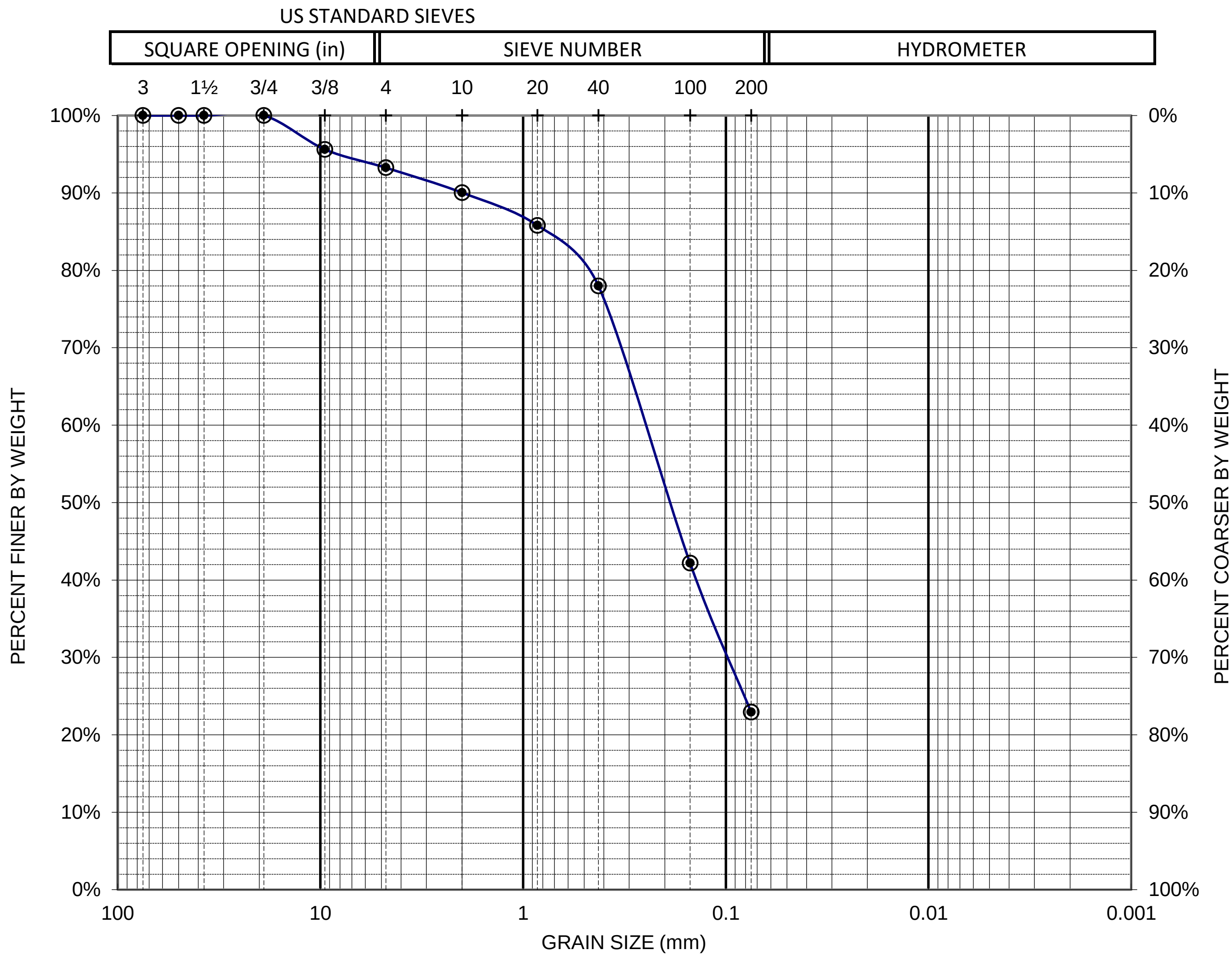
Rev030106

GRAIN SIZE TEST RESULTS

PROJECT NAME	Scott Lane Elementary School					**PROJECT No.**	PA22.1033.00
DRILL HOLE No.	3	**DEPTH (ft)**	29.5-30	**SAMPLE**	0	**DATE OF TEST**	8/17/2022

SOURCE/QUARRY: ---

DESCRIPTION OF SOIL: Clayey Sand, dark grayish brown (10YR 4/2).



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	6.7%		70.3%			22.9%

REMARKS:

GEO-LOGIC ASSOCIATES | **Figure B-2**

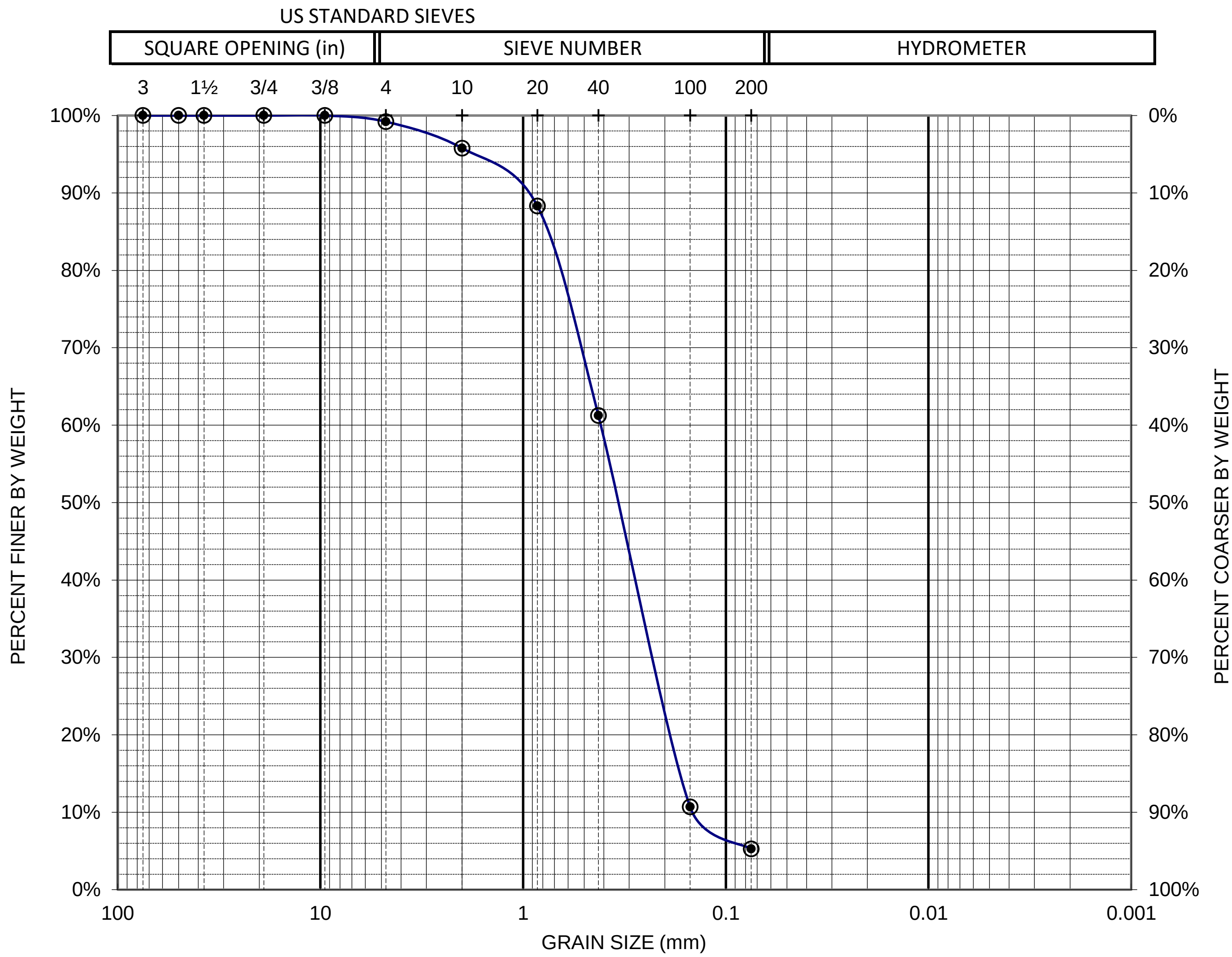
RevOct20070

GRAIN SIZE TEST RESULTS

PROJECT NAME	Scott Lane Elementary School					**PROJECT No.**	PA22.1033.00
DRILL HOLE No.	3	**DEPTH (ft)**	34.5-35	**SAMPLE**	0	**DATE OF TEST**	8/17/2022

SOURCE/QUARRY: ---

DESCRIPTION OF SOIL: Poorly graded sand, dark grayish brown (10YR 4/2)



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	0.8%		93.9%			5.3%

REMARKS:

RevOct20070

GEO-LOGIC ASSOCIATES

Figure **B-3**

'R' VALUE CA 301

Project Scott Lane Elem. School Date: 8/17/22 By: LD

Job #: PA22.1033 Sample : #1

Soil Type: Brown, Clayey Sand w. F. Gravel

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**150**	**300**	**200**	
Initial Moisture Content	%	**10.6**	**10.6**	**10.6**	
Water Added	ml	**15**	**5**	**10**	
Moisture at Compaction	%	12.0	11.1	11.5	
Sample & Mold Weight	gms	**3233**	**3248**	**3238**	
Mold Weight	gms	**2095**	**2110**	**2099**	
Net Sample Weight	gms	1138	1138	1139	
Sample Height	in.	**2.5**	**2.451**	**2.472**	
Dry Density	pcf	123.2	126.7	125.2	
Pressure	lbs	**3485**	**7365**	**4960**	
Exudation Pressure	psi	277	586	395	
Expansion Dial	x 0.0001	**25**	**62**	**44**	
Expansion Pressure	psf	108	268	191	
Ph at 1000lbs	psi	**32**	**25**	**28**	
Ph at 2000lbs	psi	**72**	**55**	**62**	
Displacement	turns	**4.11**	**3.75**	**4.03**	
R' Value		43	56	50	
Corrected 'R' Value		**43**	**56**	**50**	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**45**
By Epansion Pressure :	**41**
TI = 5	

FIGURE B-4

Geo-Logic ASSOCIATES

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 **462 2771** Fax. 925 **462 2775**
www.cercoanalytical.com

24 August, 2022

Job No. 2208022
Cust. No. 10854

Ms. Francesca Senes
Geo-Logic Associates
6300 San Ignacio Ave., Suite A
San Jose, CA 95119

Subject: Project No.: PA22.1033.00
Project Name: 1925 Scott Blvd., Santa Clara, CA
Corrosivity Analysis – ASTM Test Methods

Dear Ms. Senes:

Pursuant to your request, CERCO Analytical has analyzed the soil sample submitted on August 12, 2022. Based on the analytical results, this brief corrosivity evaluation is enclosed for your consideration.

Based upon the resistivity measurement, this sample is classified as "corrosive". All buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron should be properly protected against corrosion depending upon the critical nature of the structure. All buried metallic pressure piping such as ductile iron firewater pipelines should be protected against corrosion.

The chloride ion concentration is 47 mg/kg and is determined to be insufficient to attack steel embedded in a concrete mortar coating.

The sulfate ion concentration is 56 mg/kg and is determined to be insufficient to damage reinforced concrete structures and cement mortar-coated steel at this location.

The pH of the soil is 8.24, which does not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.

The redox potential is 300-mV and is indicative of potentially "slightly corrosive" soils resulting from anaerobic soil conditions.

This corrosivity evaluation is based on general corrosion engineering standards and is non-specific in nature. For specific long-term corrosion control design recommendations or consultation, please call *JDH Corrosion Consultants, Inc. at (925) 927-6630.*

We appreciate the opportunity of working with you on this project. If you have any questions, or if you require further information, please do not hesitate to contact us.

Very truly yours,
CERCO ANALYTICAL, INC.

Sheri Moore
for J. Darby Howard, Jr., P.E.
President

JDH/jdl
Enclosure

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Client: Geo-Logic Associates
Client's Project No.: PA22.1033.00
Client's Project Name: 1925 Scott Boulevard, Santa Clara, CA
Date Sampled: 8-Aug-22
Date Received: 12-Aug-22
Matrix: Soil
Authorization: Signed Chain of Custody

Date of Report: 24-Aug-2022

Job/Sample No.	Sample I.D.	Redox (mV)	pH	Conductivity (umhos/cm)*	Resistivity (100% Saturation) (ohms-cm)	Sulfide (mg/kg)*	Chloride (mg/kg)*	Sulfate (mg/kg)*
2208022-001	Scott Ln. ES	300	8.24	-	1,800	-	47	56

Method:	ASTM D1498	ASTM D4972	ASTM D1125M	ASTM G57	ASTM D4658M	ASTM D4327	ASTM D4327
Reporting Limit:	-	-	10	-	50	15	15
Date Analyzed:	17-Aug-2022	17-Aug-2022	-	16-Aug-2022	-	18-Aug-2022	18-Aug-2022

Sherri Moore
Chemist

* Results Reported on "As Received" Basis
N.D. - None Detected

Quality Control Summary - All laboratory quality control parameters were found to be within established limits

ATTERBERG LIMITS
Summary Report
ASTM D-4318

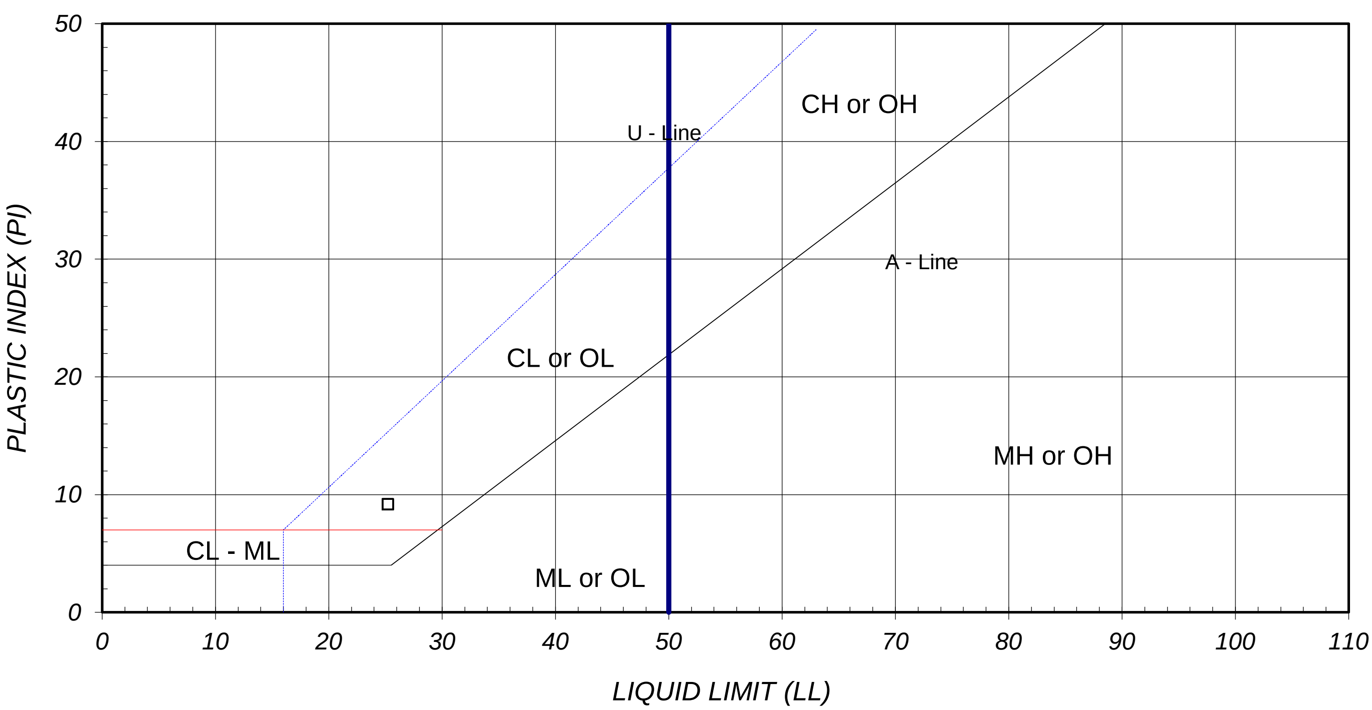
Geo-Logic ASSOCIATES

Client : Pacific Geotechnical Engineering
Project No: 2014.0069.400
Lab Log No.: 3711
Project Name: SCUSD Portables - Scott Lane Elementary
Report Date: May 15, 2014

LSN	SYMBOL	SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX
3711E	□	DH-2 @ 3.5	Gray Sandy Clay	25	16	9

* Visual Classification based on ASTM D-2488

PLASTICITY CHART



This testing is based upon accepted industry practice as well as the test method listed. These results apply only to the samples supplied and tested for the above referenced job.

L : Labexcel \ Projects \ Client \ Pacific Geotech \ 2014.0069.400PI3
Print Date: 05/15/14
Entered By: JL
Reviewed By: KH
LLN: 3711

DCN: PI-rp (rev. 9/18/12)

Corrosivity Tests Summary

CTL # 226-240 **Date:** 5/15/2014 **Tested By:** PJ **Checked:** PJ

Client: Pacific Geatechnical Engineering **Project:** SCUSD Portables **Proj. No:** 2014.0069

Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%		(Redox)		Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
Scott Lane DH1	-	1.5+3.0	-	-	4,470	14	33	0.0033	7.6	493	26	-	15.3	Grayish Brown Clayey SAND

APPENDIX C

RESULTS OF LIQUEFACTION ANALYSES

Pacific Geotechnical Engineering
16055 Caputo Drive, Suite D
Morgan Hill, CA 95037

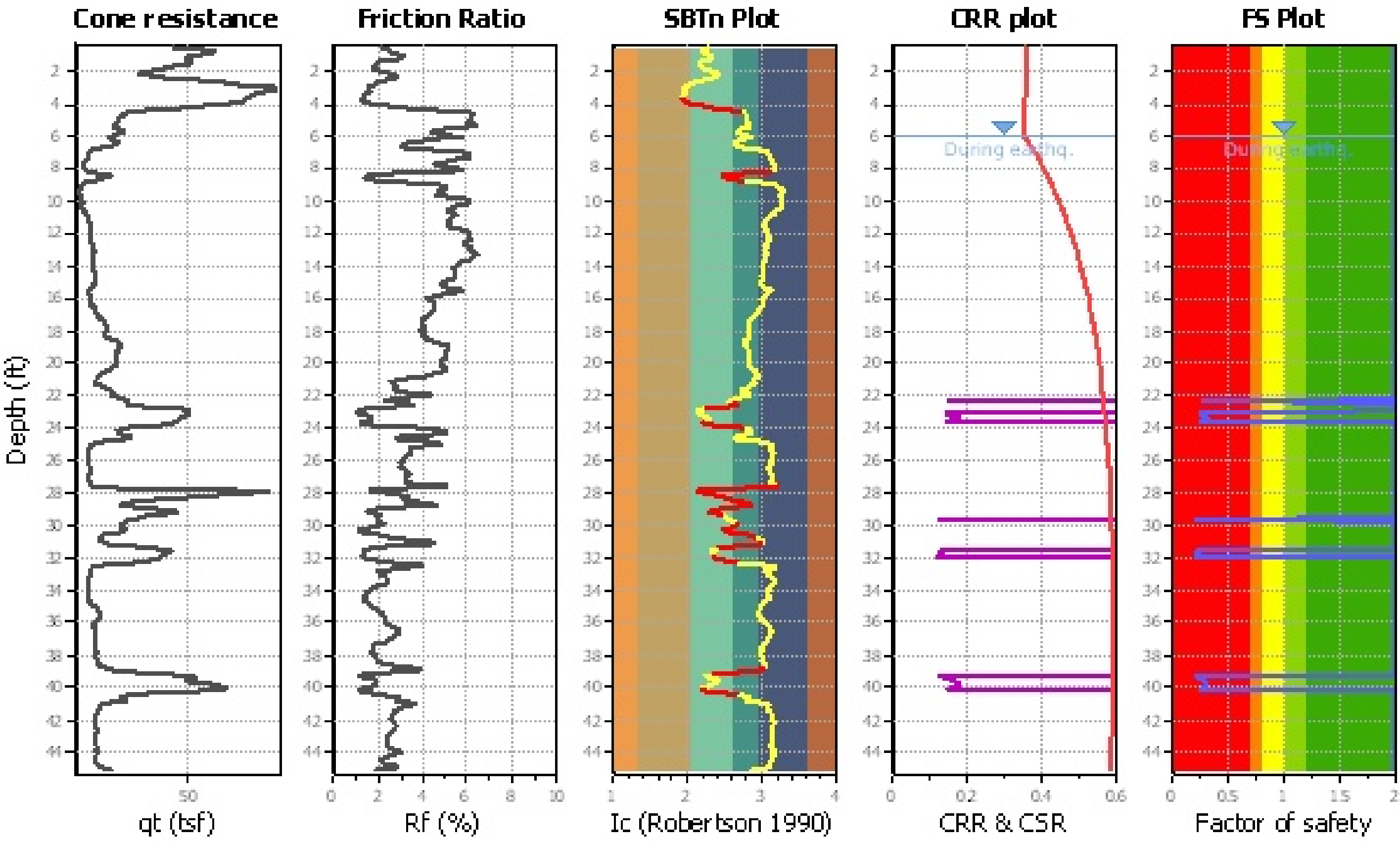
LIQUEFACTION ANALYSIS REPORT

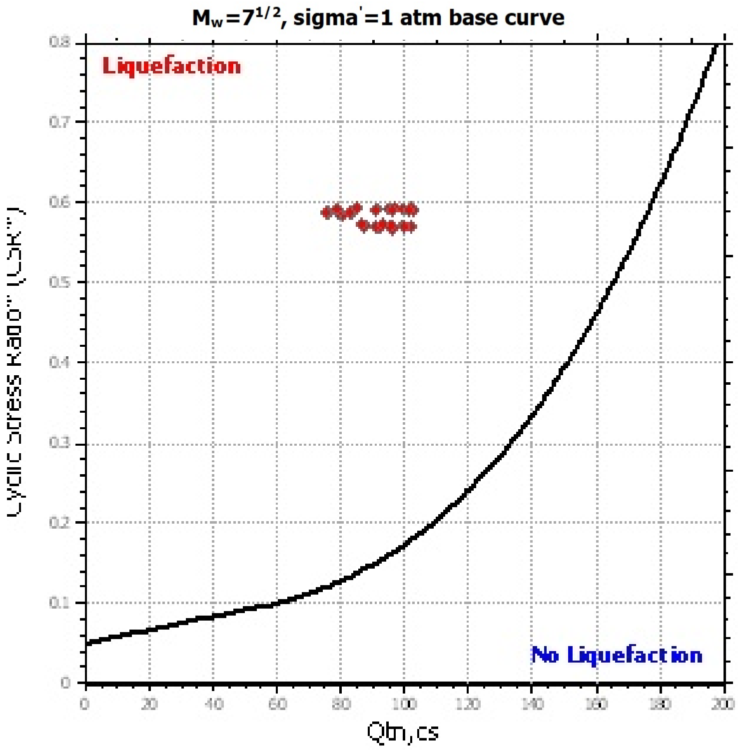
Project title : Scott Lane ES **Location : Santa Clara, CA**

CPT file : ScottLane 1

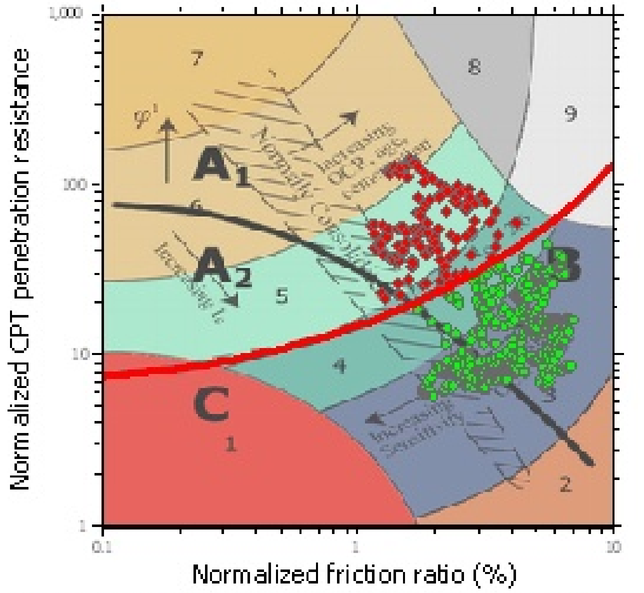
Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	6.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	6.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.55	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		



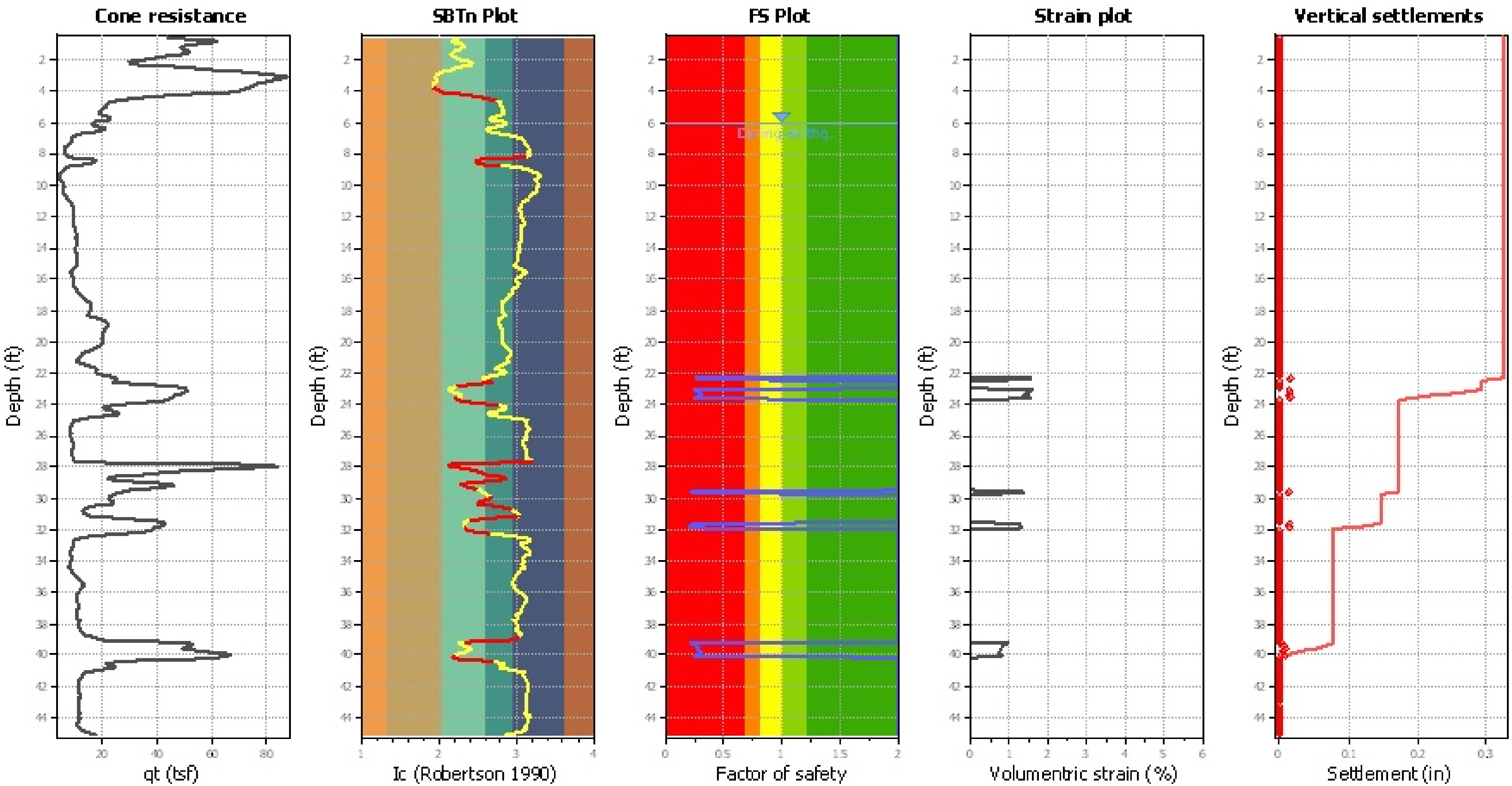


Summary of liquefaction potential



Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Pacific Geotechnical Engineering
16055 Caputo Drive, Suite D
Morgan Hill, CA 95037

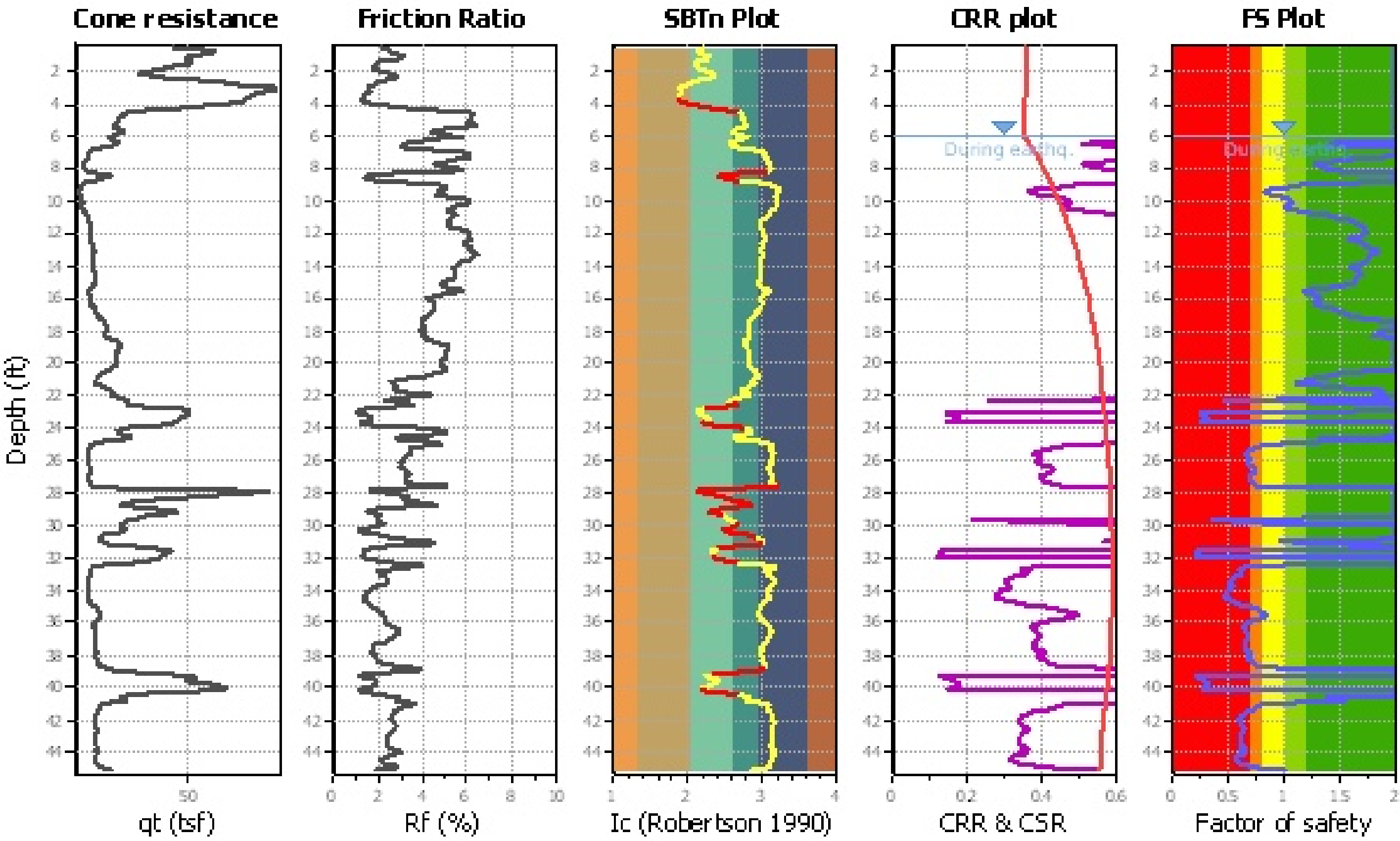
LIQUEFACTION ANALYSIS REPORT

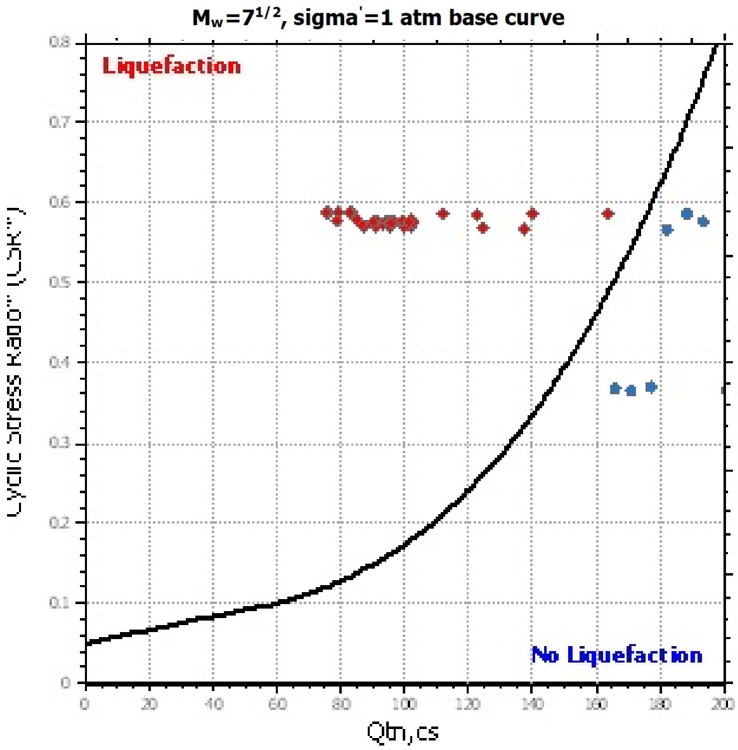
Project title : Scott Lane ES **Location : Santa Clara, CA**

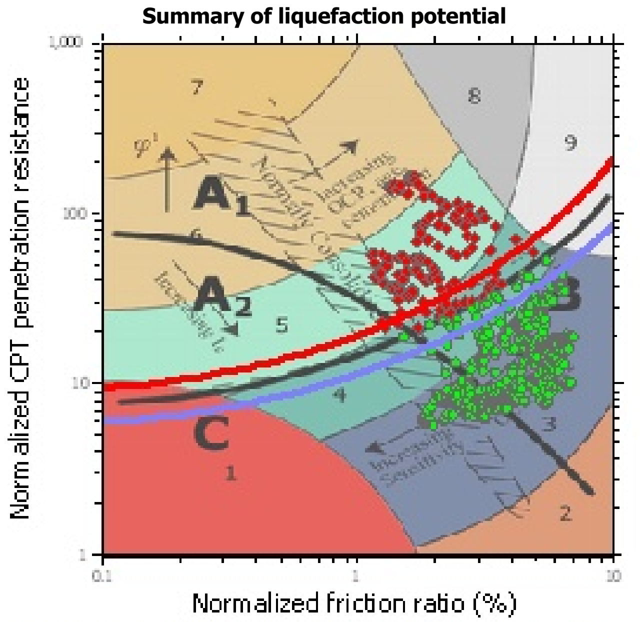
CPT file : ScottLane 1

Input parameters and analysis data

Analysis method:	Robertson (2009)	G.W.T. (in-situ):	6.00 ft	Use fill:	No	Clay like behavior applied:	All soils
Fines correction method:	Robertson (2009)	G.W.T. (earthq.):	6.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.55	Unit weight calculation:	Based on SBT	K_σ applied:	No		

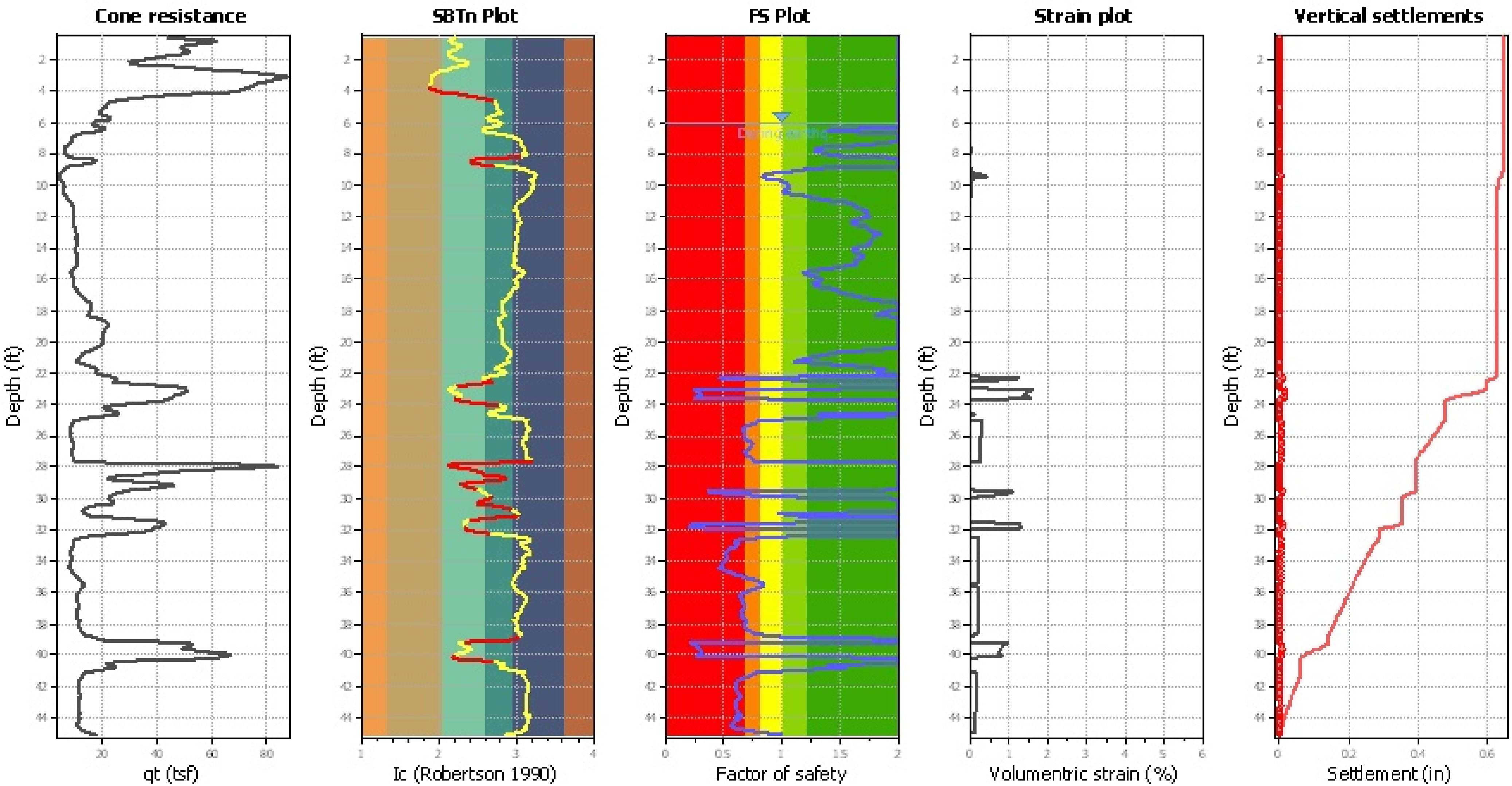






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

LIQUEFACTION POTENTIAL ANALYSIS

REFERENCE: Liquefaction Resistance of soils, Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils, by T.L. Youd and I.M. Idriss, Journal of Geotechnical & Geoenvironmental Engineering, April 2001

Last revision Jul 08

Project Name: Scott Lane Elementary School **Proj. #:** PA22.1033 **Date:** 8/26/2022 **By:** BL

Design peak ground accel., PGA = 0.55 g
Hammer weight, Wh = 140 lbs
Hammer drop, d = 30 inches
Design earthquake magnitude = 7.5
(MSF = 10^2.24/(Mw^2.56) = 1.00)
GS elev= 160
New fill thickness = 0 feet @ 125 pcf = 0 psf additional overburden
GW for liquefaction= 157.5

Soil Layer	Depth to Bottom of Layer, ft	Total Density, pcf	USCS	Total Vertical Stress @ bottom of layer, psf	Effective Vertical Stress @ layer bottom, psf
0	0	0	0	0.0	0.0
1	3.00	110.0	CL	330.0	330.0
2	6.00	110.0	CL	660.0	660.0
3	9.50	110.0	CH	1045.0	1045.0
4	15.00	117.0	CH	1688.5	1688.5
5	20.00	127.0	CH	2323.5	2323.5
6	27.00	125.0	CH	3198.5	2761.7
7	32.00	128.0	SC	3838.5	3089.7
8	39.50	132.0	SP	4828.5	3611.7
9	45.00	125.0	CI	5516.0	3956.0
10	50.00	127.0	CI	6151.0	4279.0
11				6151.0	6151.0
12				6151.0	6151.0
13				6151.0	6151.0
14				6151.0	6151.0
15				6151.0	6151.0
16				6151.0	6151.0
17				6151.0	6151.0
18				6151.0	6151.0
19				6151.0	6151.0
20				6151.0	6151.0

Boring #	Diameter*, Db, in	Depth to groundwater @ drilling, ft	GW depth below finish grade for liquefaction analysis, ft	Energy ratio correction Ce
DH-3	4	20	6	1.4

* use Db = 4.5, 6 or 8 inches

Correction Factor Ce	
Equipment variable	Values
Donut hammer	0.5 - 1.0
Safety hammer	0.7 - 1.2
Auto trip donut hammer	0.8 - 1.3

C2, Code for Sampler Type	Type of Sampler	O.D. of Sampler (in)	I.D. of Sampler shoe (in)	Sampler-Hammer Ratio for CLAY (x10^5)	Sampler-Hammer Ratio for Sand (x10^5)
1	SPT	2	1.375	4.19	0.89
2	2" MC	2.5	1.875	5.43	1.49
3	D&M	3	2.375	6.67	2.25
4	SPT1	2	0	7.94	1.32

N1cs = Blowcount corrected for fines content = alpha + beta*N160		
fines content (FC)	alpha	beta
<= 5%	0	1
5% - 35%	exp(1.76-(190/FC^2))	(0.99+FC^1.5/1000)
>35%	5	1.2

Correction Factors to SPT (modified from Skempton 1986)

Factor	Term	Equipment variable	Values
Overburden	Cn	(Pa/Pv')^0.5 <=1.7	
Energy Ratio	Ce	Donut hammer	0.5 - 1.0
		Safety hammer	0.7 - 1.2
		Auto trip donut hammer	0.8 - 1.3
Borehole diameter	Cb	65-115 mm (2.5"-4.5")	1.00
		150 mm (6")	1.05
		200 mm (8")	1.15
Rod length	Cr	< 3 m (10')	0.75
		3-4 m (10'-13')	0.80
		4-6 m (13'-20')	0.85
		6-10 m (20'-33')	0.95
		10-30 m (33'-98')	1.00
Sampling Method	Cs	Standard sampler	1.0
		Sampler w/o liners	1.1-1.3

Note: if (N1)60cs is over 30, soil is considered non-liquefiable

Depth below O.G. (ft)	Field blow count, N	Code for Sampler Type, C2	Fines Content (%)	Rod Length, L(rod) (ft)	Cs	Cr	Total Vertical Stress (psf)	Effective Vertical Stress (psf)	N' corrected for sampler size	Cn	(N1)60 = N'*Cn*Cr*Ce*Cb*Cs	(N1)60cs (corrected for % fines)	Total Vertical Stress w/ Fill (psf)	Effective Vertical Stress @ design GW (psf)	rd	CSR	CRR(7.5) for clean granular soils	High Overburden Correction Factor	FS against liquefaction	Volumetric Strain (Tokimatsu & Seed 1987)	Seismic Ground Settlement (in)
30.00	33	3	23	30	1.0	0.95	3582.5	2958.5	17	0.82	19	25	3582.5	2084.9	0.921	0.566	0.29	0.99	0.50	0.0125	0.75
35.00	65	3	5	35	1.0	1.00	4234.5	3298.5	34	0.78	37	37	4234.5	2424.9	0.891	0.556	No liquef	0.94	2.00	0.0000	0.00
															1.000						
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															1.000						
															1.000						
															1.000						

Total liquefaction induced ground surface settlement, in = 0.75

Appendix E: Ambient Noise Monitoring Data

Westwood Elementary School Campus
Santa Clara, CA

Ambient Noise Monitoring Data
Prepared by MIG

TABLE 1: SUMMARY OF SHORT-TERM NOISE MONITORING DATA												
Site	**Date**	**Time**	**Duration**	**Leq**	**Lmin**	**Lmax**	**L(01)**	**L(08)**	**L(16)**	**L(25)**	**L(50)**	**L(90)**
ST-1	4/11/2023	10:30 AM	10 minutes	57.5	40.3	72.2	63.4	61.3	59.6	58.2	56.0	52.4
ST-2	4/11/2023	10:46 AM	10 minutes	48.9	38.6	63.4	56.8	53.4	50.8	48.6	45.5	42.2
ST-3	4/11/2023	11:59 AM	8 minutes	64.0	63.3	65.4	64.3	64.2	64.2	64.1	64.0	63.8

Ambient Noise Monitoring Sites

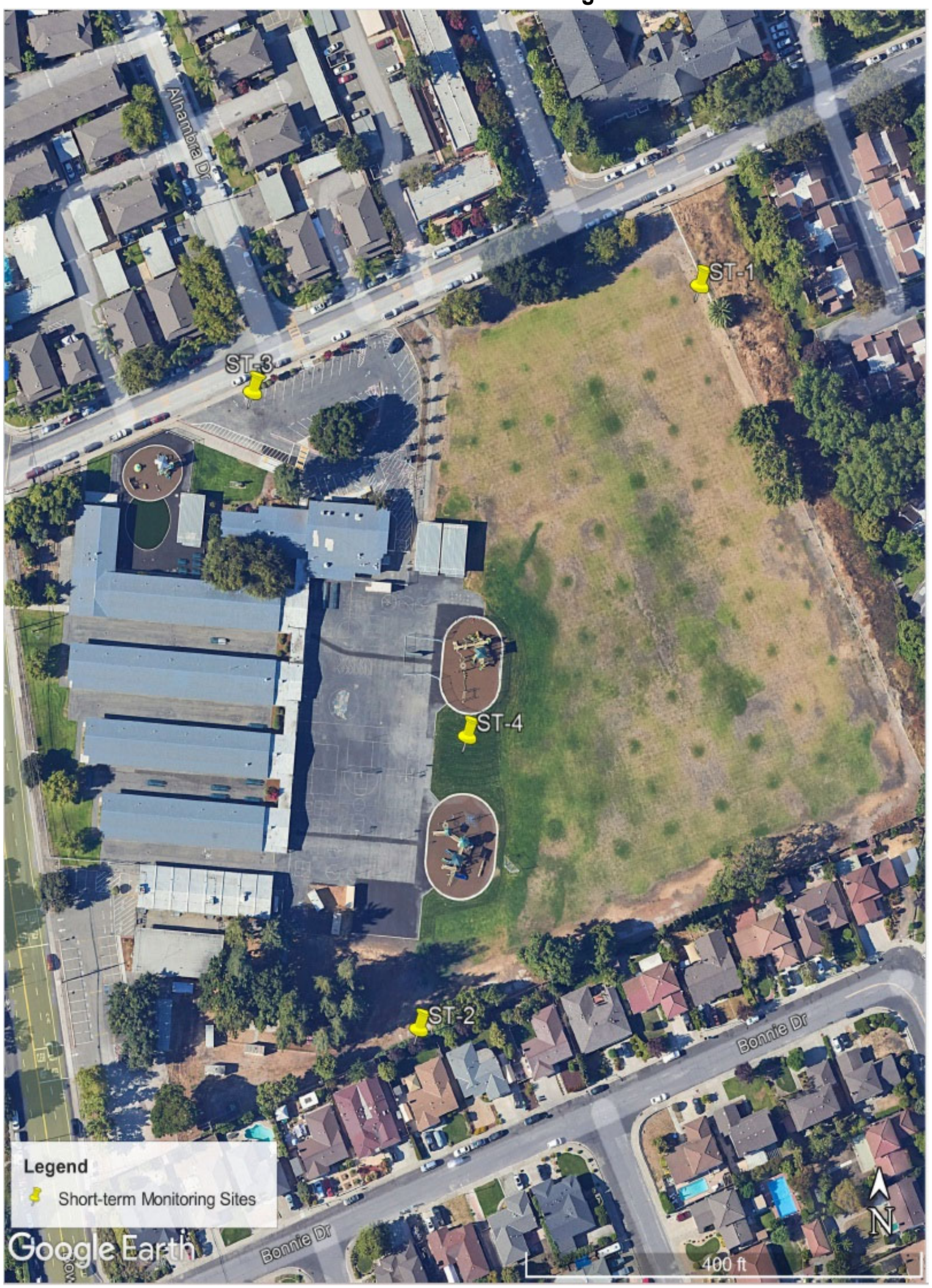
Bracher Elementary School Campus
Santa Clara, CA

Ambient Noise Monitoring Data
Prepared by MIG

TABLE 2: SUMMARY OF SHORT-TERM NOISE MONITORING DATA

Site	Date	Time	Duration	Leq	Lmin	Lmax	L(01)	L(08)	L(16)	L(25)	L(50)	L(90)
ST-1	4/12/2023	8:45 AM	10 minutes	50.3	46.4	58.2	53.6	52.4	51.6	51.1	50.0	48.2
ST-2	4/12/2023	9:05 AM	55 minutes	53.5	45.2	70.8	59.2	56.3	55.0	54.0	52.2	50.3
ST-3	4/12/2023	7:35 AM	50 minutes	58.5	47.7	78.4	62.7	61.6	61.3	59.5	57.7	54.8
ST-4	4/12/2023	10:10 AM	10 minutes	68.8	50.0	83.1	72.9	71.7	71.4	69.7	68.1	65.0

Ambient Noise Monitoring Sites



Briarwood Elementary School Campus
Santa Clara, CA

Ambient Noise Monitoring Data
Prepared by MIG

TABLE 1: SUMMARY OF SHORT-TERM NOISE MONITORING DATA												
Site	**Date**	**Time**	**Duration**	**Leq**	**Lmin**	**Lmax**	**L(01)**	**L(08)**	**L(16)**	**L(25)**	**L(50)**	**L(90)**
ST-1	4/13/2023	10:57 AM	10 minutes	44.6	39.0	58.2	48.2	47.2	46.8	45.2	43.9	42.6
ST-2	4/13/2023	10:45 AM	60 minutes	45.8	38.1	67.8	53.3	49.4	47.4	46.0	43.8	41.3
ST-3	4/13/2023	10:45 AM	60 minutes	49.6	35.8	76.4	59.6	54.2	50.0	47.5	43.0	40.3

Ambient Noise Monitoring Sites

Appendix F: Transportation Memo

Hexagon Transportation Consultants, Inc.

Memorandum

Date: January 6, 2025

To: Christine Lau, MIG

From: Robert Del Rio, T.E.
Daniel Choi

Subject: Transportation Analysis for the Proposed Master Plan for the Scott Lane Elementary School (Santa Clara Unified School District) in Santa Clara, California

Hexagon Transportation Consultants, Inc. has completed a transportation analysis for the Master Plan for the Scott Lane Elementary School in Santa Clara, California. The project site is located near the southwest corner of Scott Boulevard and Cabrillo Avenue (see Figure 1).

Project Description

The Scott Lane Elementary School Master Plan is part of the school district's master plan update for four existing elementary schools in the City of Santa Clara. These schools include the following:

- Bracher Elementary School
- Briarwood Elementary School
- Westwood Elementary School
- Scott Lane Elementary School

As part of the master plan for each school, each site will include modernization, reconfiguration, and/or expansion for each campus. The campus adjustments may result in reconfiguration and/or addition of parking along with adjustments to access and circulation. The intent of the Master Plan is to modernize the campus and update facilities for current and project school needs. The Master Plan supports an overall decrease in student population across the four sites. Currently, funding is only identified for Phase 1. The other improvements identified in the Master Plan will be completed as funding is secured for each phase.

The Scott Lane Elementary School Master Plan will be carried out in multiple phases and include the addition of six classrooms to accommodate an increase in student capacity of 157 students and six staff. In addition, a welcome center and courtyard would be constructed, additional parking would be installed, and there would be small changes to on-site circulation and inbound vehicular access.

Scope of Analysis

The transportation analysis consists of a Vehicle Miles Traveled (VMT) assessment pursuant to Senate Bill (SB) 743, the California Environmental Quality Act (CEQA) 2019 Update Guidelines Section 15064.3, subdivision (b) which states that VMT will be the metric in analyzing transportation impacts for land use projects for CEQA purposes. The Santa Clara Unified School District has not

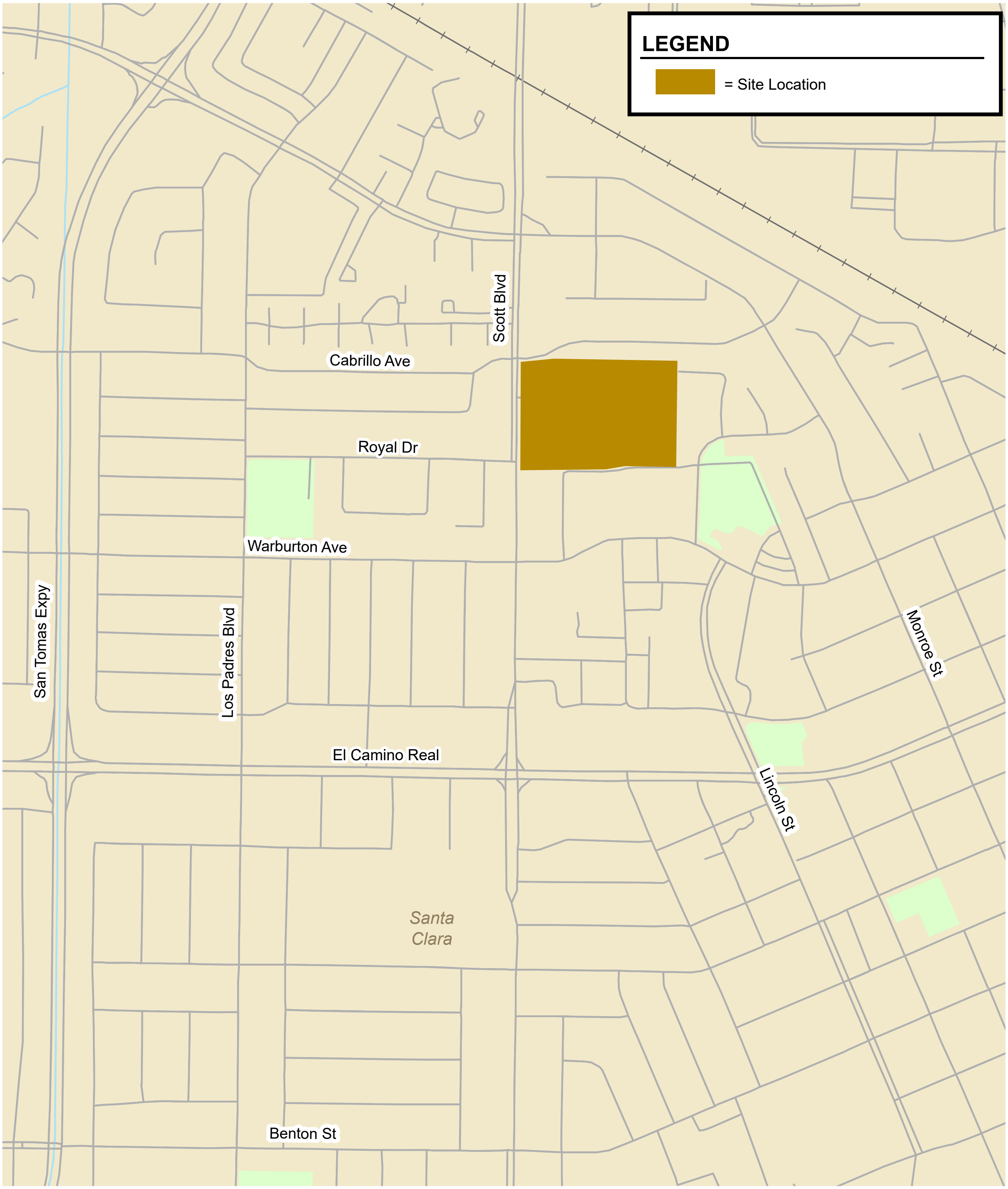


Figure 1
Site Location

NORTH
Not to Scale

adopted any analysis procedures, standards, or guidelines consistent with SB 743. In the absence of an adopted policy specific to the school district with impact thresholds, this assessment relies on guidelines published by the Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018 and the City of Santa Clara policies.

The VMT assessment for students includes a qualitative analysis that considers the planned Scott Lane Elementary increases in students and staff along with its attendance boundary as well as the cumulative effect of the master plans for the four school sites district-wide. The VMT assessment for staff members and employees for Scott Lane Elementary includes a quantitative assessment using the Santa Clara Countywide VMT Evaluation Tool. In addition, a supplemental operational analysis to determine potential adverse effects of the Scott Lane Elementary School Master Plan improvements to the local transportation network is provided. Separate operational analysis for each of the four elementary school sites will be prepared to determine any adverse effects of each school master plan.

Vehicle Miles Traveled

The school district has not adopted a policy regarding vehicle miles traveled. In the absence of a VMT policy, this study will utilize the City of Santa Clara's adopted VMT policy. The City of Santa Clara's adopted VMT policy identifies screening criteria that determine whether a CEQA transportation analysis would be required for projects. The criteria are based on the type of project, characteristics, and/or location. If a project meets the City's screening criteria, it is presumed that the project would result in a less-than-significant transportation impact and a detailed VMT analysis is not required. The type of projects that may meet the screening criteria include the following:

- Small Projects (generating 110 daily trips or less)
- Retail uses of 50,000 square feet or less ("Local Serving Retail")
- Local serving public projects such as fire stations, neighborhood parks, libraries, and community centers
- 100% Affordable Housing projects
- "Transit Supportive Projects." A project will qualify as a Transit Supportive Project if it meets the following requirements:
    - The Project is located within ½ mile of an existing Major Transit Stop or an existing transit stop along a High-Quality Transit Corridor
    - For Office/R&D projects, a minimum Floor Area Ratio of 0.75
    - For Residential projects, a minimum density of 35 units/acre
    - Project promotes multimodal transportation networks
    - Project includes transit-oriented design elements
    - No excess parking: the project does not include more parking for use by residents, customers, or employees of the project than required by the City Code
    - No loss of affordable dwelling units: the project does not replace affordable residential units with a smaller number of affordable units, and any replacement units are at the same level of affordability

Evaluation of Screening Criteria

Public schools are excluded from the screening criteria. Therefore, the proposed master plan and its increase in students and staff is not screened from completing a VMT evaluation. The project is located within ½ mile of an existing high-quality transit corridor. However, the lack of transit-oriented design elements and excess number of parking spaces excludes the project from the screening criteria. Therefore, the project is required to evaluate potential environmental impacts with the thresholds of significance described in the city's adopted VMT policy.

Student VMT Analysis

The city's adopted VMT policy does not specify significance thresholds for public school projects. Therefore, in consultation with city staff, the student VMT analysis consists of a qualitative assessment of the proposed increases in student capacity for the Scott Lane Elementary site as well as the cumulative effect on VMT for the four elementary school master plans and the combined decrease in student capacity along with the school's and district's attendance boundaries. Since teachers and staff members are akin to office workers, staff VMT consists of a quantitative assessment using the Santa Clara Countywide VMT Evaluation Tool.

The master plan for the Scott Lane Elementary School site would allow for an increase in student enrollment capacity from 781 to 938 students. However, the proposed master plans for the four elementary schools would cumulatively decrease the combined total enrollment capacity at the four school sites by 32 students. A summary of the proposed classrooms and maximum student enrollment capacity for each site is shown on Table 1.

Table 1
Summary of Proposed Classrooms and Student Enrollment Capacity

Location	Existing Classrooms	Proposed Classrooms	Existing Student Capacity	Proposed Student Capacity	Change to Student Capacity
Bracher	27	35	665	870	205
Briarwood	32	23	795	563	-232
Westwood	35	27	746	584	-162
Scott Lane	32	38	781	938	157
		Combined Total	**2,987**	**2,955**	**-32**

Public schools typically have an attendance boundary that identifies a student's designated school based on where the student resides. The school district map and its boundaries are shown in Figure 2. The school district is not proposing any changes to its current district or individual school attendance boundaries. It should be noted that the school district maintains an open enrollment policy which allows students to attend any school within the school district regardless of their school of residence provided there is space. Therefore, it can be assumed that most students that would attend each of the four elementary schools would continue to reside and commute from within the school district boundaries. Based on the established attendance boundaries, changes to the number of students at each school or neighborhoods where students would reside within the attendance boundaries would not significantly change the length of student trips and resulting average student VMT.

Based on the locations of other elementary schools and the school district's attendance boundaries, it is estimated that a majority of the students attending the Scott Lane Elementary site would reside within one-half mile of the project site (see Figure 2). Based on the District's open enrollment policy, some students could reside in other areas within the greater school district boundaries (approximately 5 miles). However, the number of students that could reside outside of the Scott Lane Elementary attendance boundary would be small when compared to the total student population and have minimal effect on the overall average trip length of students at Scott Lane Elementary School.

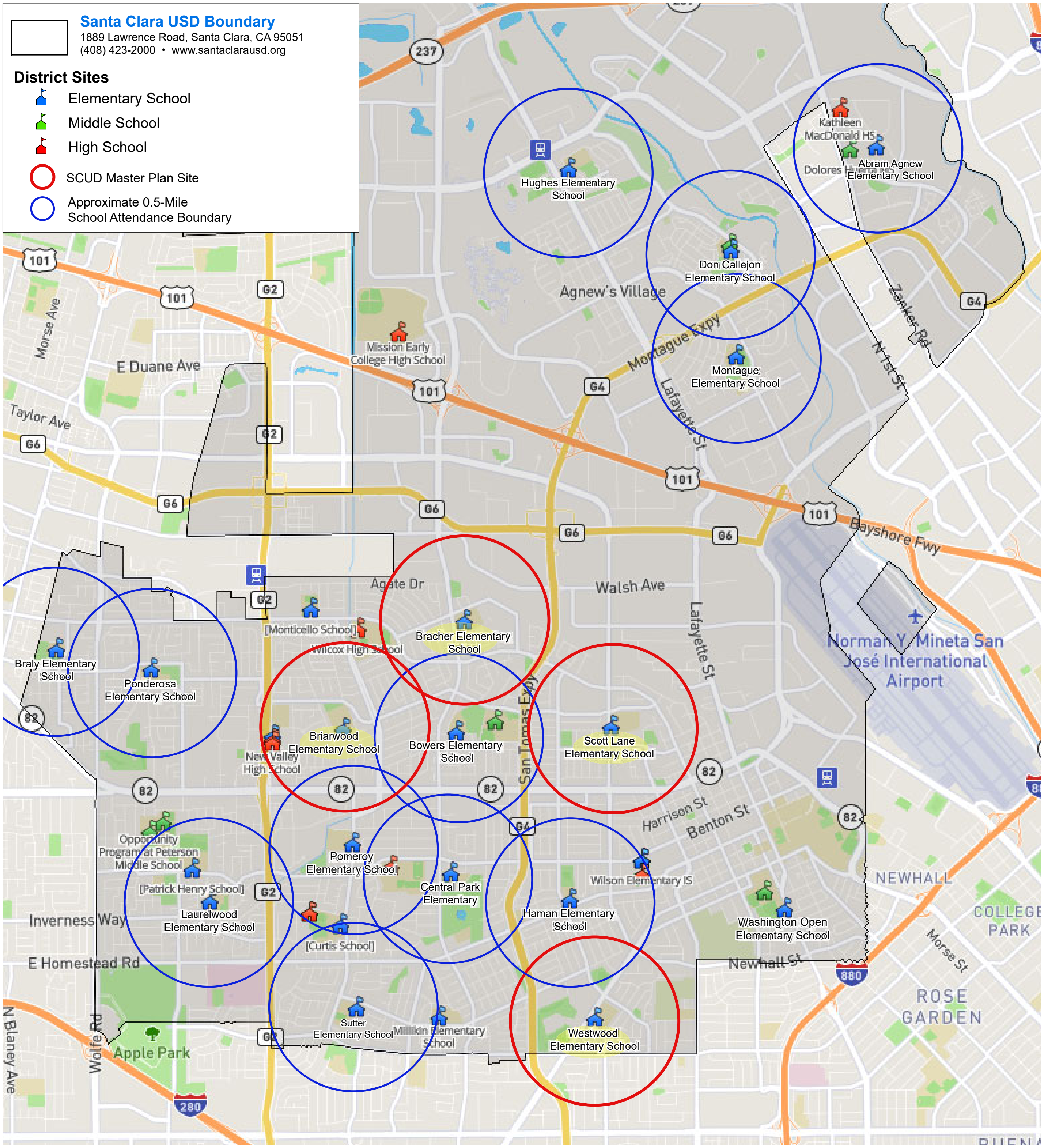


Figure 2
Santa Clara Unified School District Boundaries

Therefore, it can be concluded that the planned increase in student enrollment capacity at the Scott Lane Elementary school would not result in a significant increase in student trip length and VMT. In addition, the cumulative decrease in student enrollment capacity as a result of the four master plans for the four elementary schools would result in a district-wide decrease in VMT and a less than significant impact on VMT.

Staff VMT Analysis

Since the residences of staff members are not restricted by the school attendance boundaries, staff trips could originate from outside of the school district boundaries, the Santa Clara Countywide VMT Evaluation Tool was used to determine the VMT per employee for Scott Lane Elementary School. The inputs used for the VMT Evaluation Tool are Office Land Use and the VMT metric used for this analysis is home-based work VMT per worker. Thus, the evaluation of school staff VMT is completed by converting the trips estimated to be generated by the school staff to an equivalent amount of office square footage. This is a reasonable approach since trips generated by school employees would have similar trip-making characteristics (origin/destination and length of trips) as typical office employees.

The estimated number of daily trips generated by the school staff was converted into an equivalent amount of office space using trip generation estimates based on trip rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 11th Edition* (2021). The Scott Lane Elementary School master plan proposes up to 76 staff members at full buildout, up from the existing 70 staff members. Assuming each school employee generates two daily trips, the proposed 6 additional school employees for the Scott Elementary School site at buildout are expected to generate 12 daily trips, which is equivalent to the trips estimated to be generated by 1,100 s.f. of office space. Table 2 presents the school staff to office equivalency calculation.

Table 2
Office Equivalency Calculation

Land Use	Size		Daily Rate	Daily Trip
#520 - Elementary School	**6**	Employees	2.000	12
#710 - General Office Building	**1,100**	Square Feet	10.840	12

Source: ITE Trip Generation Manual, 11th Edition 2021.

For employment uses, the City of Santa Clara has established a threshold of significance at 15% below the existing Countywide average VMT per employee. This equates to a threshold of significance of 14.14 VMT per employee (based on an existing countywide average VMT of 16.64). Therefore, any office project which exceeds this threshold would have a significant impact on VMT. If a project is found to have a significant impact on VMT, the impact must be reduced by modifying the project to reduce its VMT to an acceptable level (below the established thresholds of significance applicable to the project) and/or mitigating the impact.

VMT of Existing Land Uses

The results of the VMT analysis using the VMT Evaluation Tool indicate that the existing VMT for office uses in the project vicinity is 14.01 per employee. Therefore, the existing VMT levels of office uses in the project vicinity are currently less the countywide average VMT levels. Attachment A presents the VMT Evaluation Tool summary report for the project.

Project-Level VMT Impact Analysis

The City's Transportation Analysis Policy identifies an impact threshold of 15% below the countywide average per-employee VMT of 16.64. Thus, the proposed project would result in a significant impact if it results in a project VMT of 14.14 VMT per employee.

The results of the VMT evaluation, using the Santa Clara Countywide VMT Evaluation Tool, indicate that the proposed project is projected to generate VMT per capita (14.01) that is below the established impact threshold. Therefore, the employees of the proposed project would not have an impact on the transportation system based on the City's VMT impact criteria.

Local Transportation Analysis

A local transportation analysis (LTA) supplements the VMT analysis and identifies transportation and traffic operational issues that may arise due to a development project. The LTA includes an evaluation of the effects of the project on transportation, access, circulation, and related safety elements in the proximate area of the project.

The LTA includes the evaluation of weekday AM, School PM, and PM peak hour operations at a limited number of intersections for the purpose of identifying operational issues (queuing, signal operations, and potential multi-modal issues) at intersections in the general vicinity of the project site. The LTA is required per the City of Santa Clara Transportation Policy, however, the operational deficiencies identified as part of the LTA are not considered impacts per CEQA guidelines.

Site Description

The project site is located on the southeast corner of Scott Boulevard and Cabrillo Avenue. The master plan would be carried out in multiple phases. Primary access to the school would remain along Scott Boulevard throughout the master plan development stages. Secondary access to the school site would be provided via Cabrillo Avenue. Site access and circulation would remain the same in phases 1 to 4. In phase 5, a welcome center and courtyard would be constructed, additional parking would be installed, and there would be small changes to on-site circulation and inbound vehicular access. Figures 3 through 7 show the proposed site plan during phases 1-5 of development.

Trip Generation

Trip generation estimates for the proposed project were based on trip rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition for "Elementary School" (Land Use 520) located in a general Urban/Suburban area. The trip generation estimate represents the increase (157) in maximum number of students (from 781 to a maximum of 938 students). Based on the ITE rates, the increase in maximum number of students would generate 356 daily trips including 116 AM peak-hour trips (63 inbound and 53 outbound), 71 school PM peak-hour trips (33 inbound and 38 outbound) and 25 PM peak-hour trips (12 inbound and 13 outbound) (see Table 3).

Table 3
Trip Generation

				AM Peak Hour				School PM Peak Hour				PM Peak Hour			
		Daily			Trip				Trip				Trip		
Land Use	Size	Rate	Trip	Rate	In	Out	Total	Rate	In	Out	Total	Rate	In	Out	Total
Proposed Land Uses															
#520 - Elementary School	**157** Students	2.27	356	0.74	63	53	116	0.45	33	38	71	0.16	12	13	25

Source: ITE Trip Generation Manual, 11th Edition 2021.

Figure 3
Phase 1 Development

NORTH
Not to Scale

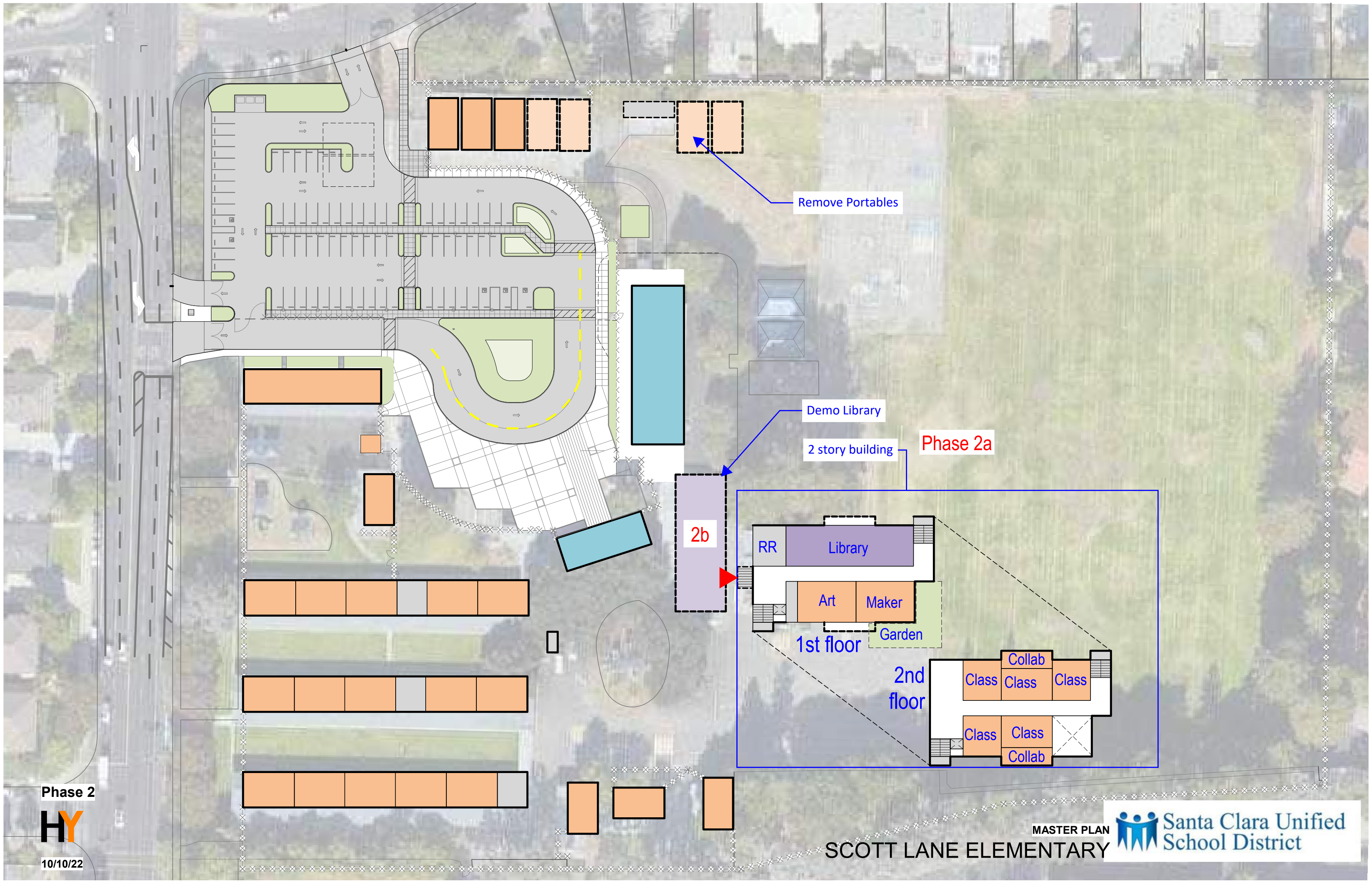


Figure 4
Phase 2 Development

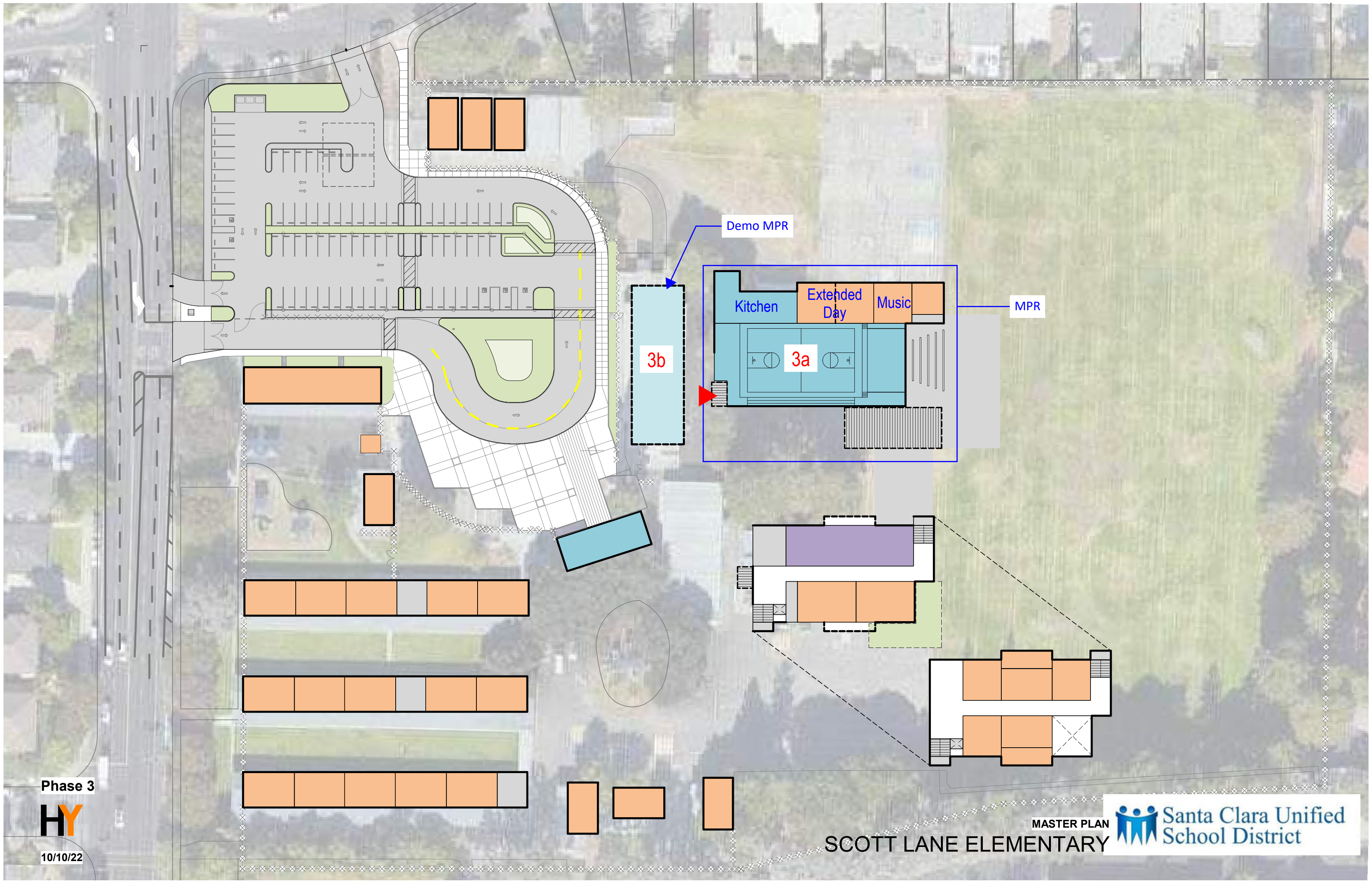


Figure 5
Phase 3 Development

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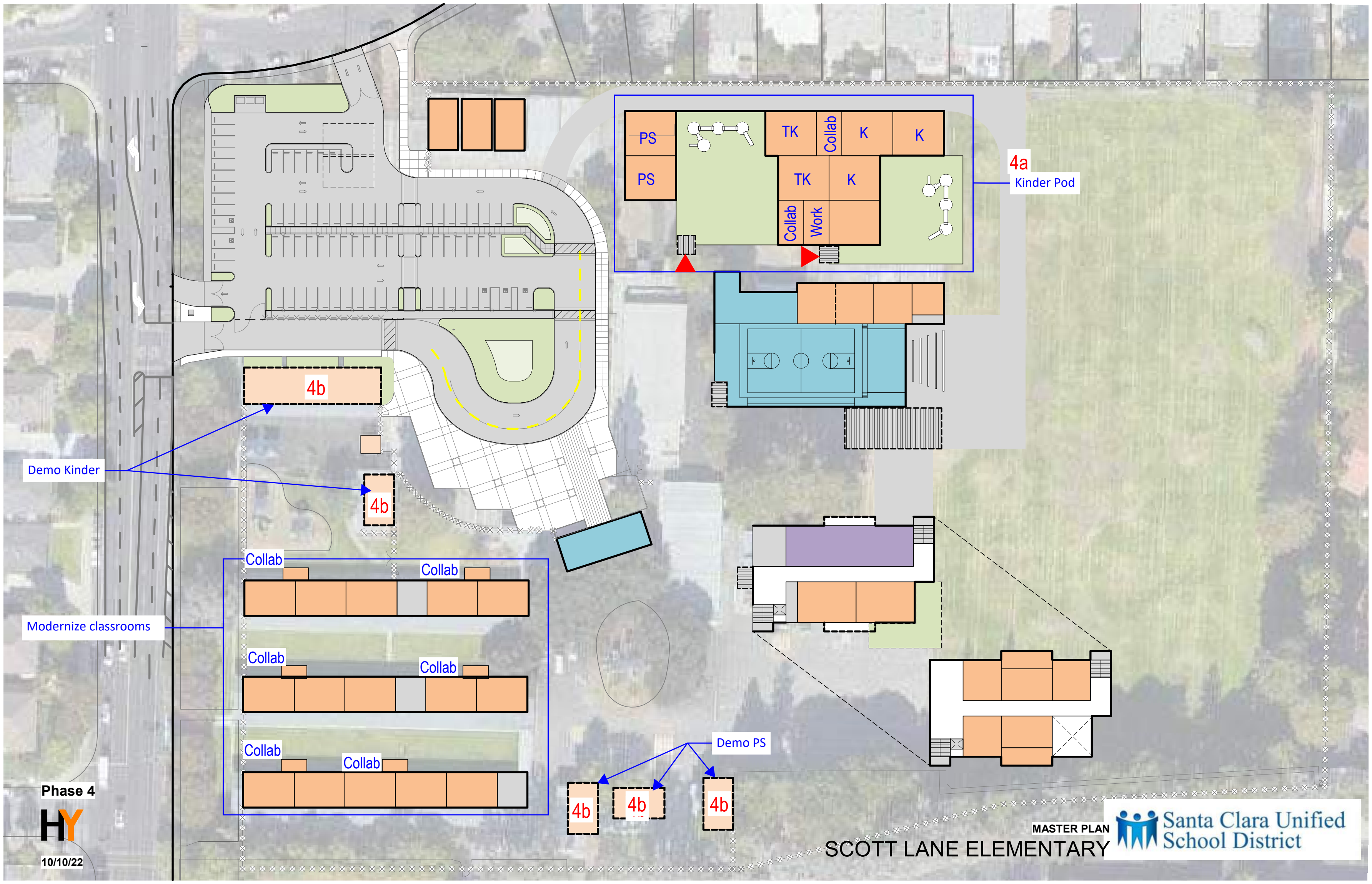

Figure 6
Phase 4 Development

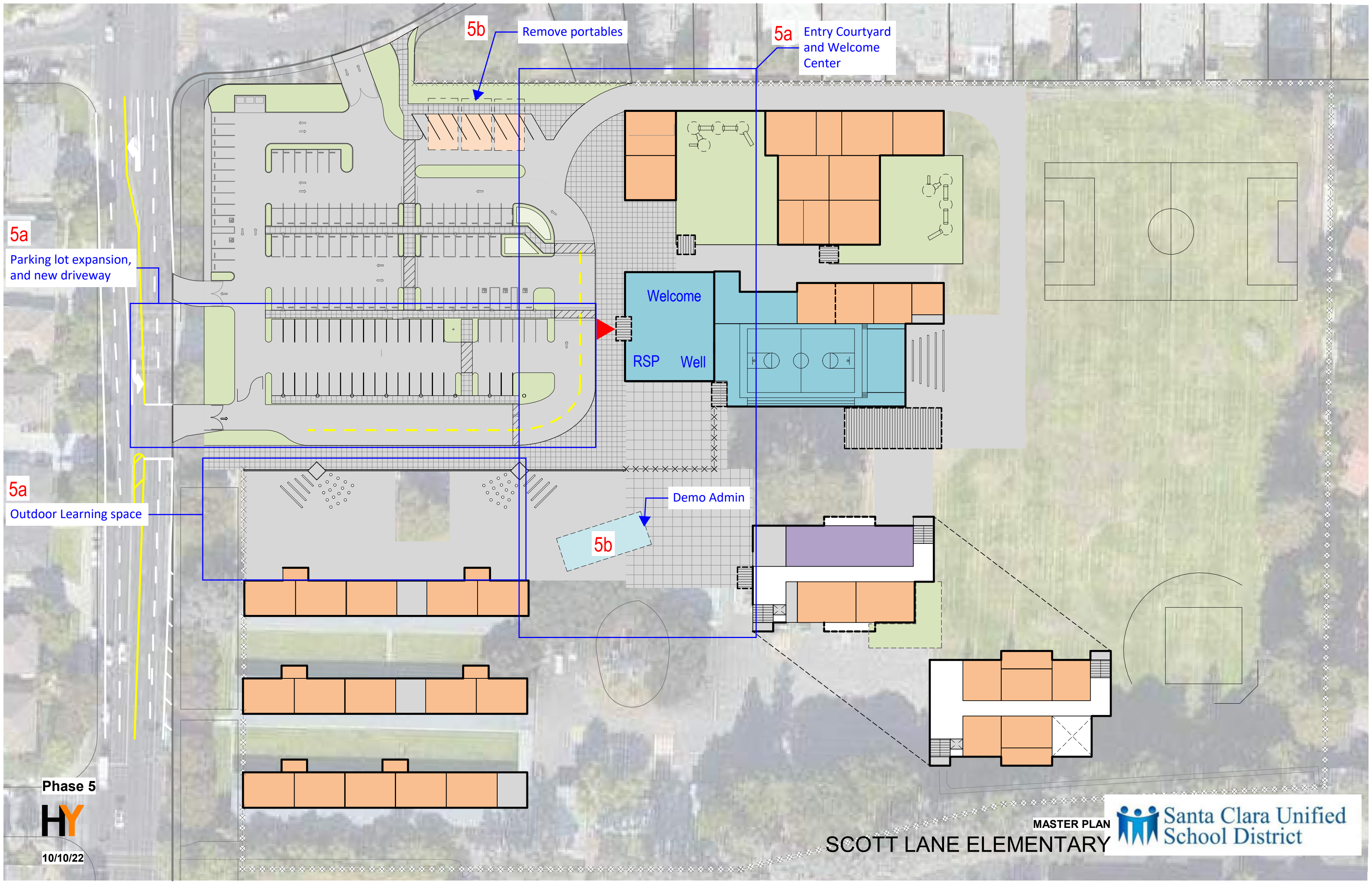

Figure 7
Phase 5 Development

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Operational Analysis

An operational analysis was conducted at the intersection of Scott Boulevard and Cabrillo Avenue. The operational analysis includes an evaluation of level of service and signal warrant analysis during the AM, School PM, and PM peak hours.

Trip Assignment and Distribution

The directional distribution of site-generated traffic to and from the project site was estimated based on the surrounding roadway network and the location of the project driveways and the location of residential areas. The net additional peak-hour project trips associated with the proposed school were added to the transportation network in accordance with the distribution pattern. The project trip distribution pattern and assignment of project trips at the Scott Boulevard and Cabrillo Avenue intersection under existing plus project conditions are shown on Figure 8.

Intersection Level of Service Analysis

Traffic conditions at the unsignalized intersection of Scott Boulevard and Cabrillo Avenue was analyzed for the weekday AM and PM peak hours of traffic. Other intersections in the project area were not studied because the addition of project trips will be minimal, less than 10 peak hour trips per lane. The weekday AM peak hour of traffic generally falls within the 7:00 AM to 9:00 AM period and the weekday PM peak hour is typically in the 4:00 PM to 6:00 PM period. It is during these times that the most congested traffic conditions occur on a typical weekday. The weekday School PM peak hour of traffic occurs around the school's dismissal time and generally falls within the 1:00 PM to 3:00 PM period.

Existing traffic volumes at Scott Boulevard and Cabrillo Avenue intersection were obtained from new traffic counts in January 2024. Level of service was evaluated using TRAFFIX, which utilizes the Highway Capacity Manual (HCM) 2000 methodology.

Unsignalized Intersections

The methodology used to determine the level of service for unsignalized intersections is the *2000 HCM* methodology for unsignalized intersection analysis. This method is applicable for both two-way and all-way stop-controlled intersections. For the analysis of stop-controlled intersections, the *2000 HCM* methodology evaluates intersection operations on the basis of average control delay time for all vehicles on the stop-controlled approaches. For the purpose of reporting level of service for one- and two-way stop-controlled intersections, the delay and corresponding level of service for the stop-controlled minor street approach with the highest delay is reported. For all-way stop-controlled intersections, the reported average delay and corresponding level of service is the average for all approaches at the intersection. The City uses a minimum acceptable level of service standard of LOS D for unsignalized intersections.

Signal Warrants

The level of service analysis at unsignalized intersections is supplemented with an assessment of the need for signalization of the intersection. The need for signalization of unsignalized intersections is assessed based on the Peak Hour Volume Warrant (Warrant 3) described in the *California Manual on Uniform Traffic Control Devices for Streets and Highways (CA MUTCD)*, Part 4, Highway Traffic Signals, 2018. This method makes no evaluation of intersection level of service, but simply provides an indication whether vehicular peak hour traffic volumes are, or would be, sufficient to justify installation of a traffic signal. The decision to install a traffic signal should not be based purely on the warrants alone. Instead, the installation of a signal should be considered and further analysis performed when one or more of the warrants are met. Additionally, engineering judgment is

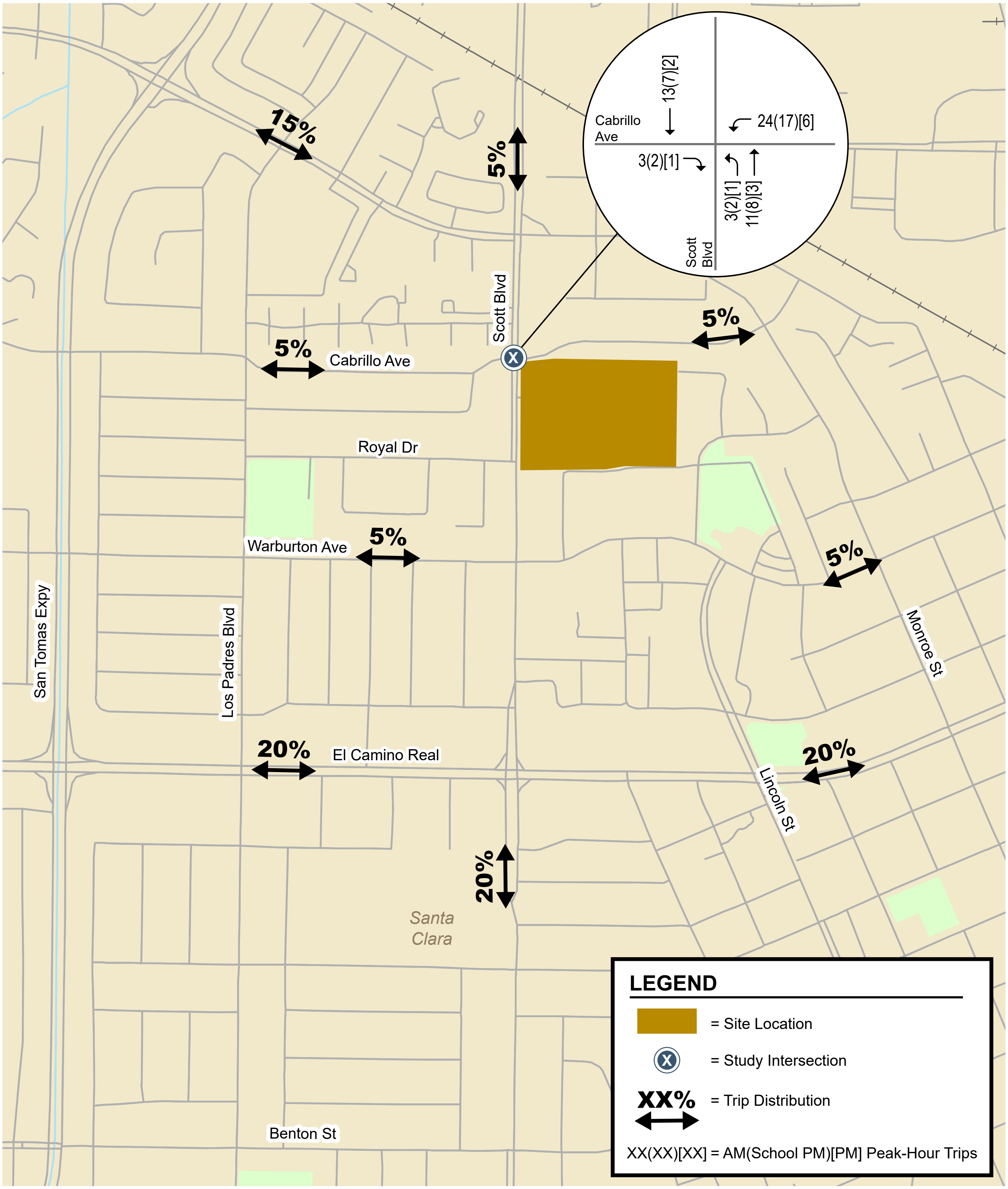

Figure 8
Trip Distribution and Net Additional Trip Assignment

NORTH
Not to Scale

exercised on a case-by-case basis to evaluate the effect a traffic signal will have on certain types of accidents and traffic conditions at the subject intersection as well as at adjacent intersections. Intersections that meet the peak hour warrant are subject to further analysis before determining that a traffic signal is necessary. Other options such as traffic control devices, signage, or geometric changes may be preferable based on existing field conditions.

Level of Service Results

The results of the intersection level of service analysis show that the study intersection of Scott Boulevard and Cabrillo Avenue currently operates at acceptable LOS D conditions and would continue to operate at acceptable LOS D conditions with the addition of project traffic during the AM and PM peak hours. Additionally, peak-hour volumes at the unsignalized study intersection would not meet signal warrant thresholds.

Based on the results of the intersection level of service analysis, the project would not have an adverse effect on operations at the Scott Boulevard and Cabrillo Avenue intersection.

Site Access

Site access across most phases of development would remain the same. During phases 1 through 4 of the master plan, primary site access will be provided via two driveways along Scott Boulevard. The existing two-way driveway along Scott Boulevard would be converted into an inbound only driveway ("Main Entry Driveway) and a new outbound only driveway ("Main Exit Driveway") would be constructed just north of the existing driveway. A new left-turn pocket along Scott Boulevard would facilitate left-turns into the main entry driveway. Additionally, a new two-way driveway would be constructed along Cabrillo Avenue ("Cabrillo Avenue Driveway"). During the full buildout (phase 5) of the master plan, the converted inbound main entry driveway along Scott Boulevard would be removed and a new inbound only driveway along Scott Boulevard would be constructed just south of the existing driveway. Figure 9 presents project trips at each of the site driveways.

Driveway Design and Sight Distance

The existing main entry driveway along Scott Boulevard measures approximately 22 feet in width at the throat, providing adequate width for inbound operations. The phase 1 conceptual plans do not indicate any changes to the existing inbound driveway. The master plan shows the main exit driveway with a right curve to facilitate right-turns only onto Scott Boulevard. A right-turn only sign should be installed to alert drivers that only right-turns may be completed from the main exit driveway. The outbound driveway should be shifted north to align with the parking lot drive aisle to minimize sight distance and turn conflicts within the parking lot. The master plan shows two-way operation for the Cabrillo Avenue driveway. The driveways along Scott Boulevard are adequate to serve one-way operations into and out of the project site. The Cabrillo Avenue driveway should be designed to be at least 24 feet in width in order to provide adequate width for two-way operations.

Providing the appropriate sight distance reduces the likelihood of a collision at a driveway or intersection and provides drivers with the ability to locate sufficient gaps in traffic. Sight distance generally should be provided in accordance with Caltrans standards. The minimum acceptable sight distance is often considered the Caltrans stopping sight distance. Sight distance requirements vary depending on the roadway speeds. For Scott Boulevard, which has a speed limit of 35 mph, the Caltrans stopping sight distance is 300 feet (based on a design speed of 40 mph). This means that a driver must be able to see 300 feet down Scott Boulevard to locate a sufficient gap to turn out of the project driveway. This also gives drivers traveling along Scott Boulevard adequate time to react to vehicles exiting the project driveway. No obstructions block an exiting driver's vision along either direction of Scott Boulevard. The existing red curb adjacent to the proposed Scott Boulevard

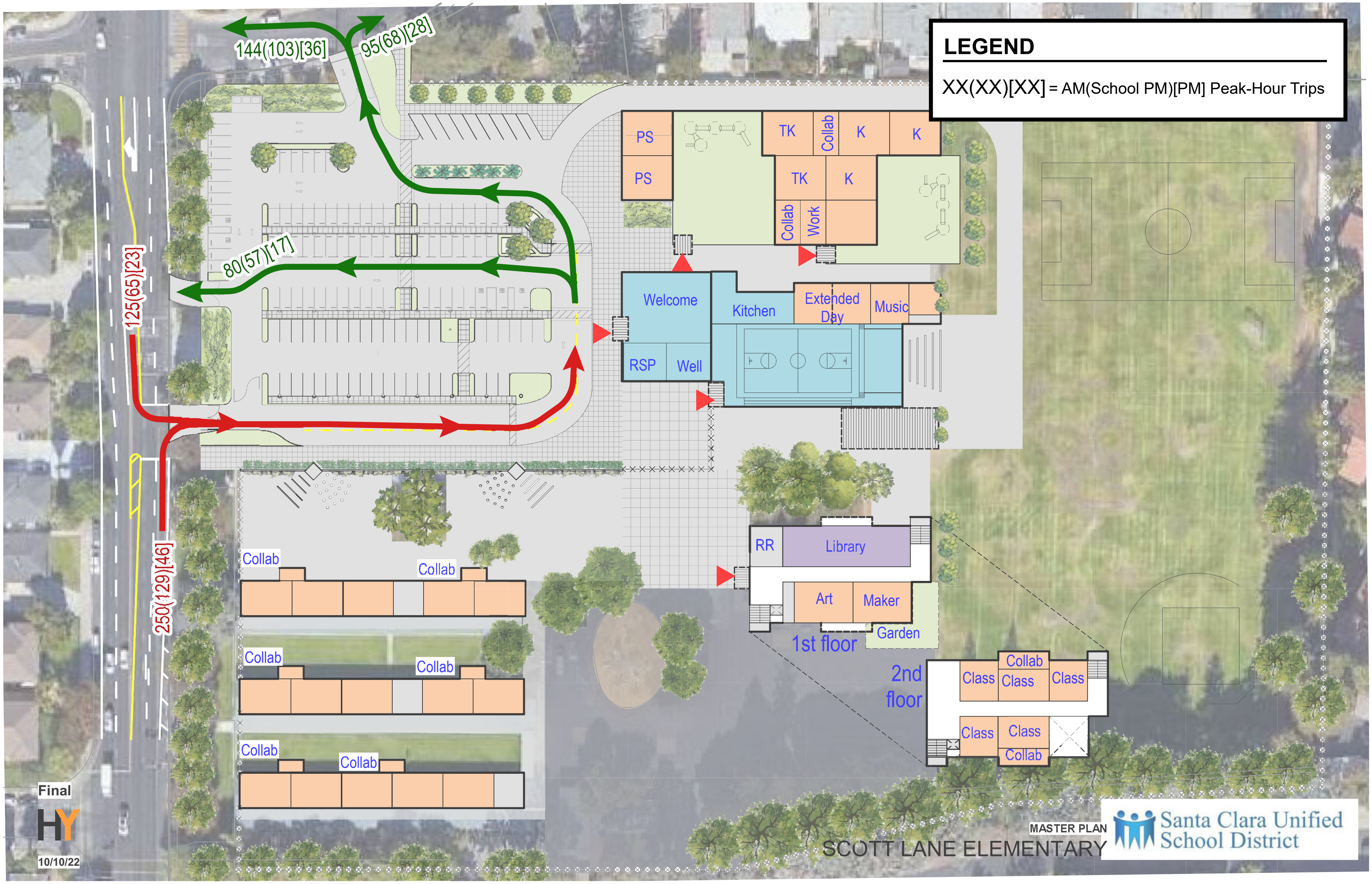

Figure 9
Site Access and Circulation

driveway prohibits on-street parking and should be maintained to ensure adequate sight distance. Due to the lack of obstructions along Scott Boulevard, it can be concluded that sight distance is adequate at the main exit driveway.

For Cabrillo Avenue, which has a speed limit of 25 mph, the Caltrans stopping sight distance is 200 feet (based on a design speed of 30 mph). This means that a driver must be able to see 200 feet down Cabrillo Avenue to locate a sufficient gap to turn out of the project driveway. No obstructions block an exiting driver's vision along either direction of Cabrillo Avenue. Some roadway curvature is present near the proposed Cabrillo Avenue driveway. However, adequate sight distance is provided along Cabrillo Avenue. The school should coordinate with the city to stripe red curb adjacent to both sides of the Cabrillo Avenue driveway equal to at least two vehicle lengths to the east of the driveway and the entire segment along the site frontage between Scott Boulevard and the driveway to ensure exiting drivers can see vehicles and bicycles along Cabrillo Avenue. With the addition of red curb adjacent to the proposed Cabrillo Avenue driveway, it can be concluded that sight distance is adequate at the proposed Cabrillo Avenue driveway.

On-Site Vehicular Circulation and Parking Layout

On-site vehicular circulation was reviewed in accordance with generally accepted traffic engineering standards. The on-site vehicular circulation during drop-off and pick-up hours allows all students to be dropped off or picked up at the curb during all phases of the master plan development. The student drop-off and pick-up area located near the south side of the parking lot area removes the need for students to walk through the parking lot areas. The proposed master plan shows a designated drop-off/pick-up lane across all phases of the master plan and a designated through lane for parents to pull out once they have dropped off or picked up their student.

Phases 1-4

During phases 1-4 of the master plan, most drive aisles are shown to be two-way drive aisles. A one-way drive aisle is present near the northeast corner of the parking lot. The conceptual plans are unclear on the width of each drive aisle. The city of Santa Clara requires a minimum drive aisle width of 24 feet for uniform parking spaces, which would provide enough space for vehicles to back out of parking spaces. For the drive aisle that extends towards the student pick-up and drop-off lanes, a left-turn only sign should be posted so that vehicles do not turn right into the pick-up/drop-off lanes. Additionally, a left-turn pavement marking, STOP marking, and stop bar near the end of the drive aisle are recommended.

The conceptual plans also show a gate near the main entry and main exit driveways. This gate should be closed during pick-up and drop-off operations to ensure a smooth flow for inbound vehicles. All parents should be instructed to enter only along Scott Boulevard for drop-offs and pick-ups. The plan indicates inbound access via Cabrillo Avenue. The Cabrillo Avenue driveway should be restricted to outbound only during drop-off/pick-up periods to limit drop-off/pick-up within the undesignated areas and traffic flow conflicts within the parking lot. Since the main exit driveway along Scott Boulevard is restricted to right-turns only, parents heading south along Scott Boulevard should be instructed to exit using the Cabrillo Avenue driveway.

Phase 5

During phase 5 of the master plan, the main entry driveway along Scott Boulevard is shifted towards the south. An additional parking module and drive aisle is added near the south side of the parking lot. The drop-off/pick-up area remains on the south side and a through lane is provided so that parents can pull out after dropping off or picking up their student. Similar to phases 1-4, two drive aisles extend towards the student pick-up and drop-off lanes. Left-turn only signs should be posted so that vehicles do not turn right into the pick-up/drop-off lanes. Additionally, a left-turn pavement marking, STOP marking, and stop bar near the end of the drive aisles are recommended.

Similar to phases 1-4, the conceptual plans also show a gate near the main entry and main exit driveways. This gate should be closed during pick-up and drop-off operations to ensure a smooth flow for inbound vehicles. All parents should be instructed to enter only along Scott Boulevard for drop-offs and pick-ups.

A new parking module near the northeast corner of the parking lot shows angled parking in a separate drive aisle. The angle of the drop-off/pick-up lane facilitates vehicle movement to proceed into the primary one-way drive aisle in the previous phases of development.

Parking Stall Dimensions

The conceptual plans are unclear on the size of each parking space but are shown to be of the same size. The city of Santa Clara allows parking facilities to be designed with 100 percent uniform-size stalls measuring 8.5 feet by 17 feet. For phases 1-4, 73 parking spaces are shown on the school site, with five ADA accessible parking spaces. For phase 5, 122 parking spaces are shown on the school site. The city of Santa Clara requires a minimum of one parking space per classroom or office. The conceptual plans show adequate parking for the number of proposed classrooms across all phases of the master plan.

Truck Access and Circulation

The project site plan was reviewed for truck access including delivery trucks, garbage trucks, and emergency vehicles.

Delivery operations would occur within the parking lot areas of the school site. Any deliveries should occur during off-peak hours. Emergency vehicle access is provided along Scott Boulevard and Cabrillo Avenue.

The site plan shows a trash enclosure adjacent to the parking lot near the northwest corner of the parking lot. In order to not block the parking area, garbage collection vehicles should only pick up trash at off peak hours; either before the student drop-off period, during class hours, or after the student pick-up period ends.

Pick-up and Drop-off Operations

The master plan proposes up to 938 students and up to 76 staff members. Typical school hours would begin at 8:15 am. Dismissals are staggered from 1:30-2:35 pm, depending on grade level. The staggered dismissal times are beneficial for pick-up operations. In all phases of the master plan, vehicles would enter from either direction from Scott Boulevard to access the drop-off/pick-up lane. Two lanes are provided: one at the curb, facilitating loading and a through lane for vehicles to pull out once their student has been dropped off or picked up. Vehicles would continue through the loading area into the parking lot. Vehicles heading northbound along Scott Boulevard can then exit using the main exit driveway along Scott Boulevard. Vehicles heading southbound along Scott Boulevard should use the Cabrillo Avenue driveway to exit and make a left turn onto Scott Boulevard. Parents should be advised of the new drop-off and pick-up circulation pattern once the master plan development begins.

It is estimated that the on-site drop-off/pick-up area will provide space for at least 10 vehicles to drop-off and pick-up students simultaneously.

Based on the project trip generation estimates, it is estimated that approximately 375 vehicles would enter the drop-off area during the AM peak-hour (highest peak hour) (See Table 4). An average of up to 13 vehicles per minute would arrive for drop-off in the morning when assuming that approximately 50% of the student drops-off/pick-ups will occur within the peak 15-minute period. No queueing would be expected to occur with the 10-vehicle capacity in the drop-off/pick up areas assuming unloading time of no more than 30 seconds per vehicle.

Table 4

				AM Peak Hour				School PM Peak Hour				PM Peak Hour			
		Daily			Trip				Trip				Trip		
Land Use	Size	Rate	Trip	Rate	In	Out	Total	Rate	In	Out	Total	Rate	In	Out	Total
Proposed Land Uses															
#520 - Elementary School	**938** Students	2.27	2,129	0.74	375	319	694	0.45	194	228	422	0.16	69	81	150

Source: ITE Trip Generation Manual, 11th Edition 2021.

Recommendation: It is recommended that school staff or parent volunteers be stationed along the drop-off area to assist students in and out of vehicles and improve drop-off procedures efficiency. School staff should ensure that students do not unload outside of the designated loading zone.

Recommendation: The loading lane should be designed to provide the maximum loading area possible.

Recommendation: Measures should be taken to ensure the efficient and safe loading/unloading of the students. It is recommended that the drop-off/pick-up area be well defined with implementation of appropriate signage and pavement markings clearly showing the student loading zone and each vehicle position. Additionally, staff should ensure that students leave and board via the passenger side of the vehicle and that students do not cross the loading zone drive aisle unattended. If a student must exit or board via the driver's side of the vehicle, staff should accompany the student while crossing the drive aisle.

Pedestrian and Bicycle Access and Circulation

Some of the students may walk or ride their bike to school. Pedestrian facilities in the study area consist primarily of sidewalks and crosswalks at intersections. The residential neighborhood in the vicinity of the school site has continuous sidewalks along most roadways. The intersection of Scott Boulevard/Royal Drive has yellow crosswalks due to their proximity to Scott Lane Elementary School. ADA-compliant curb ramps are provided at the Monroe Street/Cabrillo Avenue intersection. ADA-compliant curb ramps are missing at all corners of the Scott Boulevard/Royal Drive and Scott Boulevard/Cabrillo Avenue intersections.

There are no striped bike lanes along Scott Boulevard or Cabrillo Avenue.

Signage and Striping Requirements for Schools

Various school area signs and pavement markings are currently located along Scott Boulevard, Cabrillo Avenue, and Monroe Street in the project vicinity. These include the following:

- High visibility crosswalks (yellow crosswalk with longitudinal lines) at the intersections of Scott Boulevard/Cabrillo Avenue (east leg only) and Monroe Street/Cabrillo Avenue (south, west, and east legs)

- Yellow crosswalks at the intersection of Scott Boulevard/Royal Drive (south and west legs)
- California Manual on Uniform Traffic Control Devices (CA MUTCD) school zone sign assemblies S1-1 and S4-3P (school zone sign) along Scott Boulevard.
- California Manual on Uniform Traffic Control Devices (CA MUTCD) school zone sign assemblies S1-1 and W16-9P (school crossing ahead sign) along Monroe Street.
- California Manual on Uniform Traffic Control Devices (CA MUTCD) school crossing assemblies S1-1 and W16-7P (school crossing with arrow sign) along Monroe Street.
- California Manual on Uniform Traffic Control Devices (CA MUTCD) school zone sign assemblies S4-3P, R2-1 and S4-2P (school speed limit assembly) along Scott Boulevard.

The locations of the existing school signs and pavement markings are shown on Figure 10. Installation of new signage and additional traffic studies or surveys may be needed to conform with requirements set forth by the CA MUTCD and California Vehicle Code (CVC).

Recommendation: Section 7A.02 of the CA MUTCD recommends that a safe routes to school plan be prepared by the City of Santa Clara to fully identify pedestrian routes and address existing deficiencies to the pedestrian network. The study would identify whether there is need for improvements such as the following:

- New high-visibility crosswalks at the Scott Boulevard/Cabrillo Avenue and Scott Boulevard/Royal Drive intersections.
- All-way stop-control or signal control at the Monroe Street/Cabrillo Avenue intersection.
- Signal control at the Scott Boulevard/Cabrillo Avenue intersection.
- Advanced limit lines with proper signage before all yellow crosswalks to increase pedestrian visibility to drivers.
- Curb-extensions to shorten pedestrian crossing distances, and/or install Rectangular Rapid Flashing Beacons (RRFB) Pedestrian Crosswalk systems along with proper signage and roadway striping including R1-5 (Yield Here to Pedestrians) or Pedestrian Hybrid Beacon (PHB) along with proper signage, and in street R1-6 or R1-6b signage at the Scott Boulevard/Cabrillo Avenue and Monroe Street/Cabrillo Avenue intersections.
- Speed limit reduction to 25 mph on Monroe Street

Recommendation: As shown on Figure 10, school zone sign assemblies [S1-1 and S4-3P] or school warning assembly A [SW24-1 (CA)] are not provided along Cabrillo Avenue and Royal Drive. Additionally, a downstream end school speed limit sign [S5-3] or speed limit sign [R2-1] is not provided Scott Boulevard. The City may want to conduct a full review of existing traffic control devices in the project vicinity to ensure conformity with CA MUTCD standards.

LEGEND

= Site Location
= "SLOW SCHOOL XING" Pavement Markings
= Yellow Crosswalk
= Yellow Crosswalk with Longitudinal Lines
= Signal Mast Arm

= Yield Here to Pedestrians
HERE TO — R1-5

= End School Speed Limit
END SCHOOL SPEED LIMIT — S5-3

= School Speed Limit Sign Assembly (25 MPH)
SCHOOL — S4-3P
SPEED LIMIT 25 — R2-1
WHEN CHILDREN ARE PRESENT — S4-2P

= Speed Limit Sign
SPEED LIMIT 35 — R2-1

= School Advance Crossing Sign Assembly
S1-1
AHEAD — W16-9P

= School Zone Sign Assembly
S1-1
SCHOOL — S4-3P

= School Crosswalk Warning Sign Assembly
S1-1
W16-7P

Figure 10
Existing School Signage and Pavement Markings

HEXAGON

NORTH
Not to Scale